DOCUMENT RESUME

ED 261 257 CE 042 504

TITLE	Advanced Woodworking (Industrial Arts) Curriculum Guide. Bulletin 1752.
INSTITUTION	Louisiana State Dept. of Education, Baton Rouge. Div. of Vocational Education.
PUB DATE	85
NOTE	286p.
PUB TYPE	Guides - Classroom Use - Guides (For Teachers) (052)
EDRS PRICE	MF01/PC12 Plus Postage.
DESCRIPTORS	Behavioral Objectives; Cabinetmaking; Course Descriptions; Course Objectives; *Finishing; Furniture Design; *Furniture Industry; Hand Tools; High Schools; *Industrial Arts; Learning Activities; Occupational Information; Safety; State Curriculum Guides; Transparencies; *Woodworking

ABSTRACT

This curriculum guide contains materials for a 12-unit course in advanced woodworking for grades 11-12. It is intended for use by industrial arts teachers, supervisors, counselors, administrators, and teacher educators. A two-page course overview provides a brief course description; indicates target grade level, prerequisites, course goals, and course objectives; presents an introduction to the course; and suggests a time frame. The detailed, 14-page course outline follows. A unit teaching guide in a column format relates objectives to topics, student activities, teacher activities, and resources. The 12 units cover these topics: orientation to the wood laboratory, review of materials, designing furniture and cabinets, furniture construction, fasteners and hardware, project planning, review of basic hand tools, portable power tools, stationary power tools, material processing, advanced finishing techniques, and occupational information. Extensive appendixes include a suggested inventory of basic woodworking equipment; classroom management information and forms; charts; diagrams, sample tests, guides, and forms relating to safety; information on writing resumes; crossword and wordfind puzzles with solutions; suggested thought questions; suggested resource materials; and a bibliography. (YLB)

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1985
ADVANCED WOODWORKING
(Industrial Arts)
CURRICULUM GUIDE

Office of Vocational Education

CE042504

LOUISIANA DEPARTMENT OF EDUCATION

THOMAS G. CLAUSEN, Ph.D.
State Superintendent

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STATE OF LOUISIANA

DEPARTMENT OF EDUCATION

BULLETIN 1752

ADVANCED WOODWORKING
(Industrial Arts)

1985

Office of Vocational Education

Elaine Webb, Ed.D.
Assistant Superintendent

Thomas G. Clausen, Ph.D.
State Superintendent

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FOREWORD

This publication is a guide for the improvement of instruction in Industrial Arts Education for the State of Louisiana. It should be of benefit to industrial arts teachers, supervisors, counselors, and administrators. These operational guidelines will help local administrators, teacher educators, and industrial arts teachers to determine the extent to which their programs are meeting the needs of our youth. Industrial Arts Education Programs must be organized to meet the needs of all students.

A constant concern of educators is the construction and revision of curriculum. Industry and technology are the core of industrial arts instruction. Both are constantly changing; therefore, curriculum and instruction must change in order to provide students a realistic and accurate understanding of industry and its function in our complex technological society.

Thomas G. Clausen
THOMAS G. CLAUSEN, Ph.D.
STATE SUPERINTENDENT OF EDUCATION

ACKNOWLEDGEMENTS

This publication represents the cooperative efforts of personnel in the Louisiana Industrial Arts Association and the Industrial Arts Section in the Office of Vocational Education, Louisiana State Department of Education. Special recognition goes to Project Director, Dr. Thomas L. Eppler, Northwestern State University, who was instrumental in the development of the guide. Special commendation goes also to the following writing team members who worked diligently to produce this guide: Charles Backes, Sidney Sanders, Ray Songy, and Sherman Vogel.

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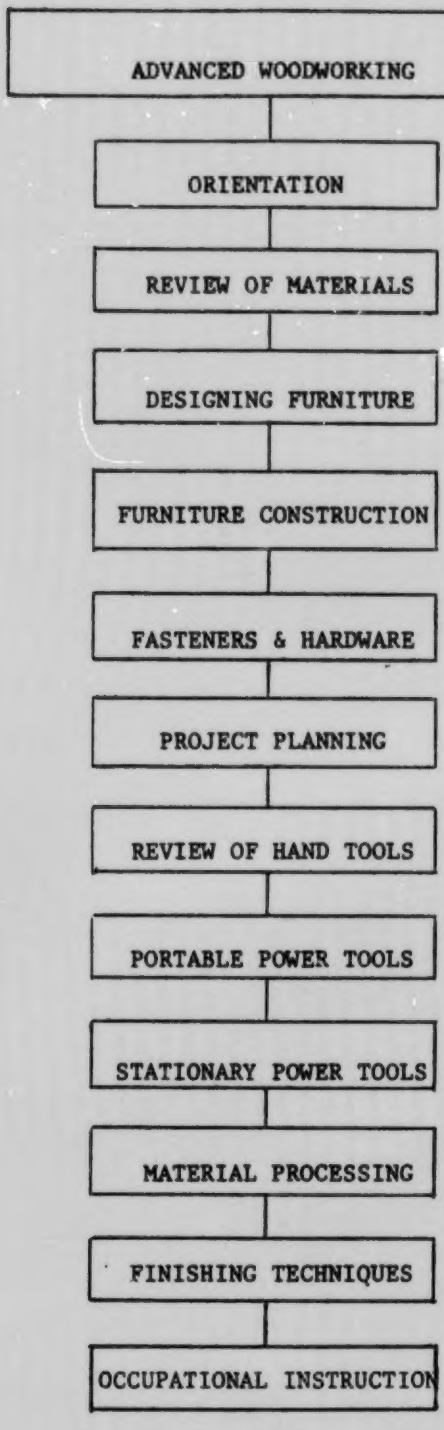
Assistant Superintendent
Office of Vocational Education


ADVANCED WOODWORKING
ORIENTATION
REVIEW OF MATERIALS
DESIGNING FURNITURE
FURNITURE CONSTRUCTION
FASTENERS & HARDWARE
PROJECT PLANNING
REVIEW OF HAND TOOLS
PORTABLE POWER TOOLS
STATIONARY POWER TOOLS
MATERIAL PROCESSING
FINISHING TECHNIQUES
OCCUPATIONAL INSTRUCTION

Title:

Advanced Woodworking

Course Description:

Advanced Woodworking is designed for students interested in improving their knowledge and experiences dealing with the materials, tools, and processes used in the manufacturing of wood products.

Students will design, plan, and build articles of furniture, recreational products, or any project which serves as a vehicle for learning and skill development. Students will be supported in the improvement of their time management skills. They will also be instructed in effective methods of estimating construction time.

Target Grade Levels:

Grades 11 - 12

Prerequisite:

Basic Woodworking

Course Goals:

In Advanced Woodworking, the students will be introduced to the woodworking lab. This preview will include descriptions of the lab's layout, its management, evaluation methods, and safety procedures. They will also be instructed to better understand consumer behavior, product design, joinery methods, fastening materials and techniques as well as effective project planning ideas. By spending the majority of their time practicing the safe use and maintenance of hand tools, portable power tools and stationary power tools, the student will develop a considerable degree of skill and understanding of desirable work habits.

The students' knowledge will be enhanced in the area of material processing. These skills will include squaring of stock to finished dimensions, gluing techniques, and clamping methods. Finally, the students will be supported in improving their awareness of various woodworking-related careers through discussions, introductions, and explorations into their new wooden world.

Course Objectives:

To provide advanced experiences in the types, manufacture, and use of wood and wood-based products.

To encourage students to appreciate and develop working drawings based on the elements of good design and efficient construction techniques.

To provide an understanding of advanced material processes and construction techniques.

To encourage safe work habits.

To acquire advanced skills in the use of hand, portable, and stationary power tools.

To provide the information and skills needed to properly select and use finishing materials found in the woodworking industry.

To encourage thought processes dealing with the evaluation and selection of careers within the woodworking industry.

Introduction

A student may ask, "Why take a course in woodworking in the space age?" It may seem in the age of the jet plane, missiles, and satellites, that woodworking is obsolete. This is not the case, however. The truth is the per capita consumption of lumber in the United States is three and one-half times the average of world consumption. While metal manufacturers employ more semiskilled production workers, one's chances for a skilled trade job is far better in woodworking. There are approximately 10,000 lumber mills, 150 plywood mills and 16,000 logging operators that employ nearly 600,000 workers in the South and the West. With related operations, the woods industry is the fifth largest employer in the United States. Why take a woodworking class indeed! The woods industry tells us of a glorious past and promises a bright future for all those related to this industry.

Advanced woodworking is designed to give students an insight and an understanding of the tools, materials, machines, and processes of the woodworking industry. Students will discover and develop abilities, aptitudes and interest relating to technical pursuits. They will develop skills in the safe and proper use of tools and machines as well as problem-solving and creative skills.

Suggested Time Allotment

The suggested time frame for Advanced Woodworking is 174 days. The remaining 6 days are to be used as necessary for the opening and closing the woods laboratory, school functions and in units where the instructor feels additional time is needed.

ADVANCED WOODWORKING

A COURSE OUTLINE

I. ORIENTATION TO BASIC WOODS

A. General Overview of Course

1. Course description and content
    - a. Goals
    - b. Objectives
    - c. Activities
    - d. Projects (control/individual/MP/GP)
2. Student personnel organization
    - a. Job descriptions
    - b. Assignment charts/boards
    - c. Responsibilities
    - d. Chain of Command

B. Grading Procedures

1. Attitudes
    - a. Lab work
    - b. Study assignments
    - c. Cooperation
    - d. Attendance and punctuality
    - e. Behavior
2. Testing
    - a. Quizzes
    - b. Semester
3. Project evaluation
    - a. Student
    - b. Instructor
    - c. Follow-up

C. Tour of Wood Lab and Facilities

1. Identification and location of tools and equipment
    - a. Hand tool storage
    - b. Machine tool location and identification
    - c. Location miscellaneous equipment
2. Wood lab safety
    - a. Safety rules for lab
        - (1) fire exits and drills
        - (2) storage areas
        - (3) supplies
        - (4) overhead extension cords
    - b. Safety equipment locations
        - (1) eye protection
        - (2) first aid

        - (3) fire extinguishers
        - (4) power panel and master switch
        - (5) push sticks and devices
        - (6) metal containers for oily rags
        - (7) metal cabinet for finishing materials
        - (8) safety metal containers for flammable liquids

II. REVIEW OF MATERIALS

- A. Tree Growth and Development
  - 1. Hardwoods
    - a. Identifying
    - b. Characteristics
    - c. Uses
    - d. Open grain/closed grain
  - 2. Softwoods
    - a. Identifying
    - b. Characteristics
    - c. Uses
    - d. Open grain/closed grain

- B. Lumbering Operations
  - 1. Cutting logs into lumber
    - a. Plain (flat sawed lumber)
      - (1) characteristics
      - (2) advantage/disadvantage
    - b. Quarter sawed lumber
      - (1) characteristics
      - (2) advantage/disadvantage
  - 2. Seasoning methods
    - a. Air dried (AD)
      - (1) characteristics
      - (2) advantage/disadvantage
    - b. Kiln dried (KD)
      - (1) characteristics
      - (2) advantage/disadvantage
    - c. Combination
      - (1) advantage
      - (2) disadvantage
  - 3. Grading of lumber
    - a. Grading of softwoods
    - b. Grading of hardwoods
    - c. Defects that affect grading
  - 4. Selection of and grading lumber products
    - a. Plywood manufacturing
      - (1) veneer core

        - (2) lumber core
        - (3) solid core (particle center)
        - (4) interior/exterior
        - (5) hardwood plywood grades
        - (6) softwood plywood grades
        - (7) marine plywood
        - (8) fibercore
        - (9) uses
      - b. Hard board
        - (1) uses and applications
        - (2) selection of proper grade
        - (3) standard sizes available
      - c. Particle board
        - (1) uses and applications
        - (2) selection of proper grade
        - (3) standard sizes available

III. DESIGNING FURNITURE AND CABINETS

A. Determining Needs

- 1. Usefulness
- 2. Desirability
- 3. Versatility

B. Design Factors

- 1. Function
  - a. Strength
  - b. Capacity
  - c. Overall size
- 2. Appearance
  - a. Utility/style
  - b. Color
  - c. Harmony
  - d. Balance
  - e. Aesthetic qualities

C. Periods

- 1. Periods/locale/craftsmen
- 2. Examples of periods
  - a. Duncan Phyfe
  - b. Chippendale
  - c. Louis XIV
  - d. Queen Anne
  - e. Victorian
  - f. Sheridan
  - g. Hepplewhite
  - h. Adams Brothers

IV. FURNITURE CONSTRUCTION

A. Wood Joinery

1. Common joints
   a. Butt
      (1) edge-edge
      (2) end-end
      (3) face-face
      (4) edge-end
      (5) edge-face
      (6) end-face
   b. Rabbet
   c. Dado/groove
      (1) through dado
      (2) blind dado
   d. Miter
   e. Lap
      (1) end
      (2) middle
      (3) corner
      (4) crosslap
   f. Mortise and tenon
      (1) open
      (2) blind
      (3) keyed
   g. Dovetail (simple)
2. Reinforcement of joints
3. Selection and considerations
4. Trial assemblies
5. Assembling
   a. Preparation of materials
   b. Sub-assemblies

B. Types of Construction

1. Case work
   a. Frame
   b. Leg and rail
   c. Chest and case
   d. Carcass
   e. Frame with cover
   f. Panel
2. Drawers
   a. Lip
   B. Flush
3. Doors
   a. Hinged
      (1) solid

            - (a) wood
            - (b) plywood
            - (c) laminate
            - (d) particle board
        - (2) panel
            - (a) wood
            - (b) plywood
            - (c) plastic
            - (d) metal
            - (e) glass
    - b. Sliding
        - (1) straight panel
        - (2) solid
        - (3) tambour
- 4. Miscellaneous
    - a. Plywood edge treating
    - b. Attaching tops
    - c. Attaching legs
    - d. Attaching shelves
        - (1) fixed
        - (2) adjustable
            - (a) shelf pins
            - (b) standards and brackets
            - (c) wood

V. FASTENERS AND HARDWARE

A. Fasteners

- 1. Screws
- 2. Nails
- 3. Staples
- 4. Glue
- 5. Other common fasteners

B. Surface Hardware

- 1. Considerations
    - a. Style
    - b. Finish
    - c. Size
    - d. Type
- 2. Kinds of surface hardware
    - a. Knobs, pulls, handles
    - b. Hinges
        - (1) cabinet
        - (2) butt
        - (3) decorative
    - c. Metal corners
    - d. Locks
    - e. Hasps and staples
    - f. Surface trim
    - g. Lamp fittings

C. Other Hardware

1. Drawer roller hardware and guides
2. Catches
   a. Friction
   b. Magnetic
   c. Elbow
   d. Bullet
3. Lid chains and stop bars
4. Lazy susan bearings
5. Metal shelf standards and clips

VI. PROJECT PLANNING

A. Alphabet of Lines

1. Border
2. Center
3. Object
4. Hidden
5. Extension
6. Dimension

B. Making and Reading Drawings

1. Sketching
2. Pictorials
   a. Oblique
   b. Isometric
   c. Perspective
3. Orthographic Projection
   a. Relationship of views
   b. Selection of appropriate views
   c. Use of graph paper
      (1) sketching to determine proportion and sizes
      (2) sketching to determine necessary views
      (3) sketching to determine necessary details
   d. Working drawings
      (1) complete size information
      (2) complete shape information
      (3) auxiliary views and/or details

C. Bill of Materials (Basic)

1. Form for bill of materials
2. Data to be prepared
   a. Type of lumber/plywood
   b. How many/how much (Bd. Ft./SF/Lin. Ft.)
   c. Dimensions

        - d. Parts identification
        - e. Cost

- F. Plan of Procedure
    - 1. Steps of construction
    - 2. Tool use list
        - a. Separate list keyed to steps
        - b. At appropriate steps

VII. REVIEW OF BASIC HAND TOOLS

- A. Hand Tool Safety

- B. Selection

- C. Use

- D. Maintenance

VIII. PORTABLE POWER TOOLS (WOODWORKING)

- A. Safety

- B. Portable Power Tools (General Information)
    - 1. Size/H.P. ratings
    - 2. Type blades, cutters, and bits
    - 3. Basic parts and adjustments
    - 4. Changing cutter, bits, and blades

- C. Portable Power Tools (Specific Information)
    - 1. Circular saws
        - a. Capacity
        - b. Types of cuts
        - c. Use of guides
        - d. Freehanding
    - 2. Drills
        - a. Types
        - b. Accessories
    - 3. Sanders
        - a. Types
        - b. Sanding techniques
        - c. Shaping and forming
    - 4. Saber saw
        - a. Type cuts
            - (1) internal
            - (2) external
            - (3) bevel

c. Limitations
(1) curves
(2) stock thickness
5. Router
a. Surface cuts
b. Edge and end cuts
6. Portable planer
7. Miter saw
8. Buffers/polishers

IX. STATIONARY POWER TOOLS (WOODWORKING)

A. Safety

1. Guards and safety equipment
2. Safety operator zones
3. Specific safety rules

B. Stationary Power Tools (General Information)

1. Size/HP ratings
2. Basic accessories
3. Types of cutters, blades, bits
4. Important terminology
5. Adjustments
6. Maintenance

C. Stationary Power Tools (Specific Information)

1. Circular saws
a. Basic cuts
b. Basic set-up for ripping/C.C.
c. Types of blades
d. Molding head
e. Dado head and blade
f. Advanced joinery techniques
g. Demonstration of specialized jigs
2. Thickness planer
a. Procedure for rough stock
(1) facing the board
(2) setting for maximum thickness
b. Thickness of cut
c. Cutting feed rate
d. Planning to finished thickness
e. Wavy grained stock
3. Jointers and uniplanes
a. Procedures for warped stock
b. Maximum thickness of cut
c. Minimum length of stock
d. Types of basic cuts
e. Push paddles or sticks

4. Tool grinders
    a. Grinding procedures
    b. Sharpening
    c. Coolants/lubricants
5. Drill Press
    a. Drilling and boring
    b. Mortising
6. Band saw
    a. Re-sawing
    b. Sawing curves
    c. Sawing straight cuts
    d. Sawing bevel cuts
    e. Multiple sawing
    f. Compound cuts
7. Scroll saw
    a. Internal cuts
    b. External cuts
    c. Bevel cuts
    d. Multiple sawing
8. Lathe
    a. Types of turning
        (1) spindle
        (2) face place
    b. Selection and types of tools
    c. Lathe speed selection
    d. Mounting stock
    e. Duplicate turnings
9. Radial arm saw
    a. Basic cuts
    b. Set-up for ripping/c.c.
    c. Optional cuts
10. Stationary sander
    a. Types
    b. Size ratings
    c. Usage
11. Shaper
    a. Types of cutters
    b. Feed/rotation
    c. Methods of shaping

X. ADVANCED FINISHING TECHNIQUES

A. Finishing Safety

1. Ventilation
2. Storage
    a. Oily rags
    b. Finishing materials

B. Surface Glue Elimination

1. Applying correct amount of glue
2. Removal procedures
    a. Wiping excess with wet cloth before drying
    b. Scraping surface
    c. Sanding

C. Surface Preparation

1. Planing to smooth mill marks
2. Scraping (curly grained woods)
3. Sanding
    a. Beginning with coarsest grade necessary
    b. Progressing to finer grades
    c. Final sanding with grain
    d. Assuring all scratches and marks are removed
4. Bleaching
    a. Purpose
    b. Procedure
5. Grain raising
    a. Purpose
    b. Procedure
6. Distressing
    a. Purpose
    b. Procedure
7. Wash coat
    a. Purpose
    b. Procedure
8. Patching and repairing
    a. Steaming dents
    b. Cracks, defects, and nail holes
        (1) wood putty
        (2) plastic wood
        (3) wood plugs and patches
        (4) glue and sawdust
        (5) spackling

D. Finishes

1. Opaque
    a. Definition
    b. Purpose
    c. Specific preparation and application
    d. Types
        (1) paints
        (2) enamels
        (3) epoxies
        (4) lacquers (colored)
        (5) acrylics

2. Transparent
    a. Definition
    b. Purpose
    c. Specific preparation and application
    d. Types
        (1) varnishes
        (2) lacquers
        (3) epoxies
        (4) shellac
        (5) sealers

E. Solvents

1. Definition
2. Types and uses
    a. Turpentine
    b. Alcohol
    c. Lacquer thinner
    d. Paint thinners
    e. Mineral spirits (Varsol, Kerosene, etc.)
    f. Water

F. Finishing Materials

1. Uses and applications
2. Types
    a. Bleaches
    b. Stains
        (1) oil
        (2) water
        (3) spirit
    c. Sealers/wash coats
    d. Fillers
    e. Linseed oil
    f. Tung oil
    g. Tinting base
    h. Oil colors
    i. Powder stains and dyes

G. Finishing Supplies

1. Uses and applications
2. Types
    a. Brushes
    b. Rotten stone
    c. Pumice stone
    d. Rubbing oil
    e. Rubbing compound
    f. Polishing compound
    g. Steel wool
    h. Wet/dry abrasives

H. Methods of Finishing

1. Brush
2. Hand rubbed
3. Spraying

XI. MATERIAL PROCESSING

A. Squaring Stock to Finished Dimensions

1. Stock cutting sizes (allowance for trimming)
2. Procedure for squaring boards
   a. Selection of best fact
      (1) sap side vs. heart side
      (2) Advantages/disadvantages
   b. Parts and dimensions of a board
   c. Steps in squaring to size

B. Gluing and Clamping

1. Common wood glues
   a. Pre-mixed
      (1) white glue
      (2) contact cement
      (3) liquid hide
      (4) aliphatic resin
   b. Powdered glues
      (1) plastic resin
      (2) casein
      (3) animal (hide)
   c. Miscellaneous glues
      (1) resorcinal (boat)
      (2) epoxy
      (3) model cement
      (4) electronic gluing
2. Purpose of gluing woods
   a. Increase size of boards
   b. Join parts
   c. Laminate
   d. Reduce warping
3. Laminating
   a. Definition
   b. Uses
      (1) beauty
      (2) strength
      (3) stability
      (4) forming

C. Bending

1. Uses

2. Methods
    a. Steam
    b. Kerfing
    c. Combination
    d. Green lumber

D. Veneers

1. Definition
2. Uses
    a. Plywood (panels and molded)
    b. Overlay
    c. Inlay
    d. Marquetry

XII. OCCUPATIONAL INFORMATION

A. The Wood Industry

1. Construction
    a. Housing
    b. Office buildings
    c. Bridges
    d. Schools
    e. Churches
2. Manufacturing
    a. Furniture
    b. Cabinets
    c. Doors
    d. Windows
3. Service
    a. Repairs
    b. Engineering
    c. Architects
4. Transportation
    a. Logs and mill
    b. Lumber
    c. Product

B. Career Opportunities Considerations

1. Personality
2. Mental abilities
3. Physical abilities
4. Interests
5. Job requirements

C. Job Classifications

1. Unskilled
    a. No required training
    b. Physical
    c. Material moving/handling

2. Semi-skilled
    a. Some special training
    b. O.J.T.
    c. Machine operators
3. Skilled
    a. Craftsman/tradesman
    b. Performs all tasks of the trade
    c. Journeymen
        (1) apprenticeship
        (2) classroom instruction
    d. Skilled crafts
        (1) carpentry
        (2) cabinetmaking
        (3) pattern making
4. Semiprofessional
    a. Forester
    b. Engineer
    c. Architect
    d. Furniture designers
    e. Real estate broker
    f. Banker
    g. Management
    h. Teachers

UNIT I: ORIENTATION TO THE WOOD LABORATORY

INTRODUCTION (PURPOSE/RATIONALE/INTENTION)	UNIT GOAL(S)	GENERAL UNIT OBJECTIVES
Introduce the students to the advanced woodworking course. Students will be briefed on grading procedures, course content, activities, tools/equipment, and general safety rules.	To introduce students to the Industrial Arts Wood Laboratory--its layout, management, evaluation, and safety procedures.	Students should be able to: 1. understand the broad scope of course content and activities. 2. understand the grading procedures. 3. identify locations of tools and equipment. 4. observe and comply with general safety rules. 5. successfully complete test on general safety rules.

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UNIT I: ORIENTATION TO WOOD LABORATORY 5 Hours

OBJECTIVES	TOPICS	STUDENT ACTIVITIES	TEACHER ACTIVITIES	RESOURCES
Students should be able to: develop and display responsible behavioral attitudes which are required in industrial and educational environments.	A. General Overview of Course 1. Course Description and content a. goals b. objectives c. activities 2. Student Personnel Organization a. job assignments for laboratory b. assignment charts/boards c. responsibilities d. chain of command	Note taking Discuss expectations, realities, and common points of agreement with teacher. Discuss past experiences related to woodworking. Make job assignment chart or job assignment board.	Present material. Act as moderator for student discussions.	State Guides Resource Person and/or materials
Interpret the value of all activities used in establishing grades.	B. Grading Procedures 1. Attitude a. lab work b. study assignments c. cooperation d. attendance/punctuality e. behavior 2. Testing a. quizzes b. tests c. semester exams 3. Project Evaluation a. student b. instructor c. follow-up	Copy grading procedure in notebooks. Have discussion, question/answer period.	Write grading procedure on board and explain with examples on board how the procedure works. Moderate discussion.	Selected Visual Aids: (Report cards, charts) Parish Grading Scale
Identify and locate tools and equipment found in the woods laboratory.	C. Tour of Wood Lab and Facilities 1. Identification and location of tools and equipment a. hand tool storage b. machine tool locations c. location of miscellaneous equipment	Observe locations of equipment and supplies.	Conduct tour of wood lab equipment and supplies.	

UNIT I: ORIENTATION TO WOOD LABORATORY (Continued)

OBJECTIVES	TOPICS	STUDENT ACTIVITIES	TEACHER ACTIVITIES	RESOURCES
Students will be able to successfully pass a general safety test concerning the wood lab, its equipment, supplies, and operational procedures.	2. Wood lab safety a. safety rules (review general safety) (1) fire exits and drills (2) storage areas (3) supplies (4) overhead extension cords	Review general safety rules Practice emergency shop evacuation. Administer safety test.	Present general safety rules of class and lab. Discuss specific lab safety rules. Have school nurse give safety demonstration in class.	Representatives from industrial or area safety council. See appendix 2. See General Industrial Arts Curriculum Guide. School Nurse
	b. safety equipment location (1) eye protection (2) first aid (3) fire extinguishers (4) power panel and master switch (5) push sticks and devices (6) metal containers (oily rags) (7) metal cabinet (finish materials) (8) safety containers for flammable liquids (9) ventilation	Students must practice shop safety at all times. Explain what life would be like without the full benefits of normal sight and hearing abilities or the full use of hands, legs and a healthy back.		

UNIT II: REVIEW OF MATERIALS

INTRODUCTION (PURPOSE/RATIONALE/INTENTION)	UNIT GOAL(S)	GENERAL UNIT OBJECTIVES
Review materials available for woodworking projects, and methods of preparation of these materials for use in the furniture and cabinetmaking industries.	Students will become consumer-oriented toward lumber and lumber products.	Students will be able to identify and display a working knowledge of available lumber products.

UNIT II: REVIEW OF MATERIALS 5 Hours

OBJECTIVES	TOPICS	STUDENT ACTIVITIES	TEACHER ACTIVITIES	RESOURCES
Students should be able to: distinguish between hardwoods and softwoods. display a working knowledge of the characteristics and uses of various lumbers.	A. Trace Growth and Development Hardwoods/Softwoods 1. Identifying 2. Characteristics 3. Uses 4. Open grained/closed grained	Observe displays. Take notes in notebooks. Participation in class discussion. Take sample woods identification table.	Display samples of lumber, exhibiting various characteristics and qualities of each. Identify and discuss lumbering operations, and tree growth and development.	Local lumber yard Selected tests
	B. Lumbering Operations 1. Cutting Logs into Lumber: Characteristics, Advantages and Disadvantages of: a. plain (flat) sawed lumber b. quarter sawed lumber	Students will note the difference of cross-cutting a piece of stock that has been kiln dried and air dried.	Discuss two methods for sawing lumber. Teacher will observe closely the student cutting operations.	Book 9, P. 160D Paxton-Patterson Guide
	2. Seasoning Methods: Characteristics, Advantages, and Disadvantages of: a. air dried (AD) b. kiln dried (KD) c. combination (AD/KD)			Lumber samples.
	3. Grading of Lumber a. grading of softwoods b. grading of hardwoods c. defects that affect grading	View filmstrips. Visit local mills.		Local lumber mill
	4. Selection of and Grading Lumber Products a. plywood manufacturing (1) veneer core (2) lumber core (3) solid core (particle center) (4) interior/exterior	Study assigned pages in textbook. Take test on unit. Review test.	Make and administer study assignments from textbooks on materials. Discuss the grading of plywood.	Textbook Plywood samples.

OBJECTIVES	TOPICS	STUDENT ACTIVITIES	TEACHER ACTIVITIES	RESOURCES
	(5) hardwood plywood grade (6) softwood (7) marine plywood (8) fibercore (9) uses	Identify the different types of plywood. Explain the manufacturing process in making plywood.	Explain and discuss the plywood grades chart.	Fiberboard samples Book 19, p. 534 Book 19, p. 536
	b. hard board (1) service (2) untempered (3) tempered	Identify the major advantages of hard board.	Display samples of hard board and particle board.	
	c. particle board (1) uses and applications (2) advantages (3) disadvantages	List the advantages and disadvantages of using particle board.	Demonstrate the techniques required when working with particle board and hard board.	Local lumber yard

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UNIT TITLE III: DESIGNING FURNITURE AND CABINETS

INTRODUCTION (PURPOSE/RATIONALE/INTENTION)	UNIT GOAL(S)	GENERAL UNIT OBJECTIVES
Develop students' skills in selecting and designing furniture. To recognize and identify furniture periods and styles.	Students will learn the selection process and design principles used in furniture construction.	Students should be able to: 1. recall and use the most important factors to consider when designing furniture. 2. identify and name the various periods and styles of furniture.

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UNIT III: DESIGNING FURNITURE AND CABINETS 3 Hours

OBJECTIVES	TOPICS	STUDENT ACTIVITIES	TEACHER ACTIVITIES	RESOURCES
Students should be able to choose a product for construction based on needs, styling/period, and incorporation of good design features.	A. Determining Needs 1. Usefulness 2. Desirability 3. Versatility	Assess individual needs, discuss possible project ideas (individual group, or mass production).	Lead discussion of factors involved in determining needs, design/styles/periods.	Magazines, furniture catalogs, media, texts, etc.
	B. Design Factors 1. Function 2. Appearance	Make notes of ideas in notebooks, along with references.		
	C. Periods 1. Periods/Locale/Craftsman 2. Examples a. Duncan Phyfe b. Chippendale c. Louis XIV d. Queen Anne e. Victorian f. Sheridan G. Hepplewhite H. Adam Brothers	Have students write an essay on a period or style of furniture. Identify periods of furniture from pictures or actual examples.	Obtain examples or pictures of period furniture.	Magazines, furniture catalogs, texts, etc.
	D. Styles 1. Early American 2. Contemporary 3. Spanish 4. French Provincial 5. Traditional 6. Italian Provincial 7. Primitive	Identify styles of furniture from pictures or actual examples List the styles of furniture you have at home.		

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UNIT IV: FURNITURE CONSTRUCTION

INTRODUCTION (PURPOSE/RATIONALE/INTENTION)	UNIT GOAL(S)	GENERAL UNIT OBJECTIVES
Provide information on the selection and construction of joinery methods used in furniture construction.	Students should be able to identify and select woodworking joints.	Students should be able to: 1. determine the best joinery and assembly methods to use for certain types of projects. 2. identify types of case construction, door, drawer, and shelf construction. 3. select hardware necessary for furniture construction.

UNIT IV: FURNITURE CONSTRUCTION 5 Hours

OBJECTIVES	TOPICS	STUDENT ACTIVITIES	TEACHER ACTIVITIES	RESOURCES
Students should be able to:	A. Wood Joinery 1. Common joints a. butt	Observe and discuss purposes, advantages, and disadvantages of the common joints used in woodworking.	Demonstrate and discuss the common joints used in woodworking.	Text, samples, and furniture
identify and select advanced wood joints. organize and plan assembly processes.	(1) edge-edge (2) end-end (3) face-face (4) edge-face (5) edge-end (6) end-face		Demonstrate procedures to be used for laying out the common wood joints.	Stanley Tool Guide-Form No. 75-10/72
	b. rabbet c. dado/groove (1) through (2) blind		Supervise student activities.	
	d. miter e. lap (1) end (2) middle (3) corner		Illustrate the importance of a properly fitted joint and allowable tolerances.	
	(4) cross f. mortise and tenon		Demonstrate the relative strengths and weaknesses of each.	
	(1) open (2) blind (3) keyed g. dovetail (simple)		Explain importance of trial assemblies.	
	2. Reinforcement of joints 3. Selection considerations 4. Trial assemblies			
	5. Assembling a. preparations b. sub-assemblies		Demonstrate the use of sub-assemblies.	

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UNIT IV: FURNITURE CONSTRUCTION (Continued)

OBJECTIVES	TOPICS	STUDENT ACTIVITIES	TEACHER ACTIVITIES	RESOURCES
Students should be able to: identify and be familiar with the common use of each type of case construction.	B. Types of Construction 1. Casework a. frame b. leg and rail c. chest and case d. carcass e. frame with cover f. panel	Observe examples from text, drawings, or actual furniture.	Provide students with examples and opportunity for discussion.	Book 14, p. 281
identify the types of drawers and joinery associated with advanced drawer construction.	2. Drawers a. types (1) lip (2) flush b. types of joinery	Observe examples from text, drawings, or actual furniture.	Provide students with examples and opportunity for discussion.	Book 14, pp. 289-291
	3. Doors a. hinged (1) solid (a) wood (b) plywood (c) laminates (d) particle board (2) panel (a) wood (b) plywood (c) plastic (d) metal (e) glass b. sliding (1) straight panel (2) solid (3) tambour			Book 6, p. 606
Explain methods for trimming the edge of plywood, and attaching furniture tops, legs, and shelves.	4. Miscellaneous a. plywood edge treating b. attaching tops c. attaching legs d. attaching shelves (1) fixed (2) adjustable (a) shelf pins (b) standards and brackets (c) wood cleats and slots	Observe techniques as demonstrated.	Demonstrate techniques.	Book 6, pp. 651-658

UNIT V: FASTENERS AND HARDWARE

INTRODUCTION (PURPOSE/RATIONALE/INTENTION)	UNIT GOAL(S)	GENERAL UNIT OBJECTIVES
To enable students to identify, select, and use fasteners in joining woods and other objects to wood.	Students will be able to select and use the proper fasteners for a project.	Students should be able to: 1. precisely identify, select, and use fasteners on projects.
To review fasteners used to join woods and other objects to wood, and hardware used in cabinetmaking.	Students will be able to select and use the proper hardware for a project.	2. select and use proper hardware on projects.

UNIT V: FASTENERS AND HARDWARE 3 Hours

OBJECTIVES	TOPICS	STUDENT ACTIVITIES	TEACHER ACTIVITIES	RESOURCES
Students should be able to: identify, select and use fasteners, and hardware as needed in advanced cabinetmaking.	A. Fasteners 1. Screws 2. Nails 3. Staples 4. Glue 5. Other common fasteners	Assemble and label a display of fasteners which are used in advanced woodworking. Short report on advantages and disadvantages of each.	Obtain samples for instruction.	Text, Lab inventory
select and install the appropriate style of surface hardware.	B. Surface Hardware 1. Considerations a. style b. finish c. size d. type 2. Kinds of surface hardware a. knobs, pulls, handles b. hinges (1) cabinet (2) butt (3) decorative c. metal corners d. locks e. hasps and staples f. surface trim g. lamp fittings	Install examples. Use on projects.	Obtain samples for instruction.	Lab inventory
	C. Other Hardware 1. Drawer roller hardware and guides 2. Catches a. friction b. magnetic c. elbow d. bullet 3. Lid chains and stop bars 4. Lazy susan bearings 5. Metal shelf standards and clips			

UNIT VI: PROJECT PLANNING

INTRODUCTION (PURPOSE/RATIONALE/INTENTION)	UNIT GOAL(S)	GENERAL UNIT OBJECTIVES
To review the basic components in project planning, including the working drawing, bill of materials, and the plan of procedure.	To further the students knowledge of planning an advanced project.	Students should be able to: 1. identify the alphabet of lines and symbols. 2. know how to make and read a working drawing. 3. complete a bill of materials for a project. 4. complete a plan of procedure for a project.

UNIT VI: PROJECT PLANNING 10 Hours

OBJECTIVES	TOPICS	STUDENT ACTIVITIES	TEACHER ACTIVITIES	RESOURCES
Students should be able to identify the alphabet of lines and symbols.	A. Alphabet of Lines 1. Border 2. Center 3. Object 4. Hidden 5. Extension 6. Dimension B. Making and Reading Drawings 1. Sketching 2. Pictorials a. oblique b. isometric c. perspective 3. Orthographic projection a. relationships of views b. selection of views c. use of graph paper (1) sketching for proportion (2) sketching for details (3) sketching for size d. working drawings (1) complete size information (2) complete shade information (3) auxiliary views C. Bill of Materials 1. Form for bill of materials 2. Data to be prepared a. type of lumber/plywood b. how many/how much c. dimensions d. parts identification D. Plan of Procedure 1. Steps of construction 2. Tool use list a. list of steps b. at appropriate steps			

UNIT VII: REVIEW OF BASIC HAND TOOLS

INTRODUCTION (PURPOSE/RATIONALE/INTENTION)	UNIT GOAL(S)	GENERAL UNIT OBJECTIVES
Review the selection and safe use of hand tools, as well as the maintenance of hand tools	Students will be able to identify, select, and develop skills in the use and care of basic hand tools.	Students should be able to: 1. compute fractions and use the ruler accurately. 2. properly use woodworking hand tools. 3. maintain woodworking hand tools.

UNIT VII: REVIEW OF BASIC HAND TOOLS 3 Hours

OBJECTIVES	TOPICS	STUDENT ACTIVITIES	TEACHER ACTIVITIES	RESOURCES
Students should: be able to select and safely use hand tools in the woodworking lab.	A. Hand Tool Safety	Make a list of the hand tools safety rules. Discuss the positive rewards of recommended dress and behavioral standards in the shop.	Describe how a safe woodworker should act and work.	Book 19, pp. 48-49
be able to maintain the hand tools used in the woodworking lab.	B. Selection	Select right tool for right job.	Demonstrate the importance of using the right tool for the job.	
	C. Use	Identify ten common layout tools. Measure lumber provided to the nearest 1/16 inch.	Demonstrate and discuss the proper use of the hand tools.	
	D. Maintenance	Have students demonstrate the correct procedure for honing plane irons and chisels. Allow students to disassemble and reassemble hand plane.	Explain the importance of properly maintaining working areas, tools and machines.	

UNIT VIII: PORTABLE POWER TOOLS

INTRODUCTION (PURPOSE/RATIONALE/INTENTION)	UNIT GOAL(S)	GENERAL UNIT OBJECTIVES
Students will be given instruction and experiences in safe and proper use of portable power tools. To exercise caution and seek parental permission as students are trained and directed to use the required power tools.	Students will demonstrate the skills necessary for safe operation of portable power tools.	Students should be able to use portable power tools safely and properly.

UNIT VIII: PORTABLE POWER TOOLS 4 Hours

OBJECTIVES	TOPICS	STUDENT ACTIVITIES	TEACHER ACTIVITIES	RESOURCES
Students should be familiar with the safe use of portable power tools and demonstrate a working knowledge of each such aid in the woodworking lab.	A. Safety	List applicable safety rules for each machine. Successfully pass with 100 percent a safety test on each tool.	Discuss general portable power tool safety.	Texts, manuals, filmstrips, appendix 2, suggested resources.
	B. Portable Power Tools (General Information 1. Size/H.P. ratings 2. Types of blades, cutters and bits 3. Basic parts and adjustments 4. Changing cutters, bits, and blades	Using an "old" or cutaway portable power tool identify the basic internal parts such as brushes, armature, switch connections, etc.	Prepare a tool for instruction and students' "hands-on" use.	Tool manual, local repair shops.
		Remove and reinstall brushes, switches, cords, etc.		
		Identify and install different types of blades, cutters, and bits.	Demonstrate and display blades, cutters, and bits.	Lab inventory, text, charts, posters.
		Observe demonstration by service repair technician on field trip or in woods lab.		
	C. Portable Power Tools (Specific Information) 1. Circular saws a. capacity b. types of cuts c. use of guides d. freehanding 2. Drills a. types b. accessories 3. Sanders a. types b. sanding techniques c. shaping and forming 4. Saber saw a. type blade/materials b. type cuts	Observe demonstration on each tool. Watch filmstrip on each tool. Demonstrate the correct use of each tool.	Demonstrate the safe and correct use of each tool and any special jigs or fixtures which may apply.	Bibliography Owner's Manuals, texts, filmstrips, transparencies.

UNIT VIII: PORTABLE POWER TOOLS (Continued)

OBJECTIVES	TOPICS	STUDENT ACTIVITIES	TEACHER ACTIVITIES	RESOURCES
	(1) internal (2) external (3) bevel c. Limitations (1) curves (2) stock thickness 5. Router a. surface cuts b. edge and end cuts 6. Portable planer 7. Miter saw 8. Buffers and polishers			

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UNIT IX: STATIONARY POWER TOOLS

INTRODUCTION (PURPOSE/RATIONALE/INTENTION)	UNIT GOAL(S)	GENERAL UNIT OBJECTIVES
To serve as an introduction for those students who were in programs which did not cover stationary power tools in its basic woodworking course. To serve as a review and skill development course for those students who were in programs which introduced stationary power tools in its basic woodworking course.	The students will demonstrate the skills necessary for safe operation of stationary power tools.	Students should be able to: 1. identify and safely use stationary power tools. 2. be familiar with the parts and maintenance of each stationary power tool in the shop. 3. use special set-ups, jigs and fixtures, as needed for advanced cabinetry and furniture making.

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UNIT IX: STATIONARY POWER TOOLS 15 Hours

OBJECTIVES	TOPICS	STUDENT ACTIVITIES	TEACHER ACTIVITIES	RESOURCES
Before using the stationary power tools, students must be able to pass a safety test on each tool.	A. Safety 1. Guards and safety equipment 2. Safety operator zones 3. Specific safety rules	Observe demonstration and lecture and take test(s) on tools.	Discuss safe working habits and share personal working experiences.	Suggested Resources (1), (4), and (5)
The students should be able to identify, safely use, and demonstrate a working knowledge of each stationary power tool in the shop.	B. Stationary Power Tools (General Information) 1. Size/H.P. ratings 2. Basic accessories 3. Types of cutters, blades, bits 4. Important terminology 5. Adjustments 6. Maintenance	Observe lecture and demonstrations, complete study guides on safety, parts, usage, etc., to prepare for demonstration.		
		Identify and explain the usage, advantages, and disadvantages of different types of blades, cutters, and accessories.	Demonstrate and display blades, cutters, and accessories.	Lab inventory, text, charts, posters, filmstrips, transparencies.
		Observe demonstration by service repair technician on field trip or in woods lab.		
		Assist teacher in tool maintenance as needed.	Allow students to assist in maintenance of tools.	
	C. Stationary Power Tools (Specific Information) 1. Circular saws a. basic cuts b. basic set-up for ripping/c.c.	Demonstrate the correct use of each power tool through the construction of project(s).	Supervise the students as they use each tool..	
		Watch filmstrips on the use of the machine(s).		
		Successfully pass a test on each machine as each machine is covered.	Administer tests and keep records of individual student's performance as they operate each machine.	Filmstrips from library, shop inventory, or industry. Texts, periodicals, owner manuals.
	c. types of blades d. molding head e. dado head and blade	Set up and use a molding head and/or dado head.		
	f. advanced joinery techniques g. demonstration of specialized jigs.	Set up the circular saw for cutting duplicate parts, dadoes, rabbets, tenons, tapers, and coves.	Demonstrate the safe and correct use of selected jigs, fixtures, and advanced methods as needed or desired.	Shop's fixtures and jigs.

UNIT IX: STATIONARY POWER TOOLS (Continued)

OBJECTIVES	TOPICS	STUDENT ACTIVITIES	TEACHER ACTIVITIES	RESOURCES
	2. Thickness planer a. procedure for rough stock (1) facing the board (2) setting for maximum thickness b. thickness of cut c. cutting feed rate d. planing to finished thickness e. wavy grained stock		Demonstrate method of planing excessively thin stock.	
	3. Jointers and uniplanes a. procedure for warped stock b. maximum thickness of cut c. minimum length of stock d. types of basic cuts e. push paddles or sticks		Demonstrate basic cuts as well as tapers and rabbets.	
	4. Tool grinders a. grinding procedures b. sharpening c. coolants/lubricants		Demonstrate method of sharpening plane irons and chisels.	
	5. Drill press a. drilling and boring b. mortising	Have students identify and use sanding drums, hole saws, "V-blocks", and other devices as needed.		
	6. Band saw a. resawing b. sawing curves c. sawing straight cuts d. sawing bevel cuts e. multiple sawing f. compound cuts		Show students how to change blades, set thrust wheels, blade guides, tension, and guard. Fold band saw blade.	
	7. Scroll saw a. internal cuts b. external cuts c. bevel cuts d. multiple sawing			

OBJECTIVES	TOPICS	STUDENT ACTIVITIES	TEACHER ACTIVITIES	RESOURCES
	8. Lathe a. types of turning (1) spindle (2) face plate b. selection and types of tools c. lathe speed selection d. mounting stock	Have each student turn a sample turning either with "free form" or a number of required operations in its design.		
	e. duplicate turnings	Have students use a duplicator, if available.		
	9. Radial arm saw a. basic cuts b. procedure for ripping/c.c.		Stress safety, especially in relation to ripping.	
	10. Stationary sander a. types b. size ratings c. usage			
	11. Shaper a. types of cutters b. feed/rotation direction c. methods of shaping			

UNIT X: MATERIAL PROCESSING

INTRODUCTION (PURPOSE/RATIONALE/INTENTION)	UNIT GOAL(S)	GENERAL UNIT OBJECTIVES
To provide students with a working knowledge of the processes used to shape and form wood projects.	Students will be able to process stock in reasonable manner by squaring, gluing, bonding, laminating, veneering, and bending.	Students should be able to apply a working knowledge of the processes used to shape and form wood projects.

OBJECTIVES	TOPICS	STUDENT ACTIVITIES	TEACHER ACTIVITIES	RESOURCES
Students should be able to select and square stock to required tolerances.	A. Squaring Stock to Finished Dimensions 1. Stock cutting sizes (allowance for trimming) 2. Procedure for squaring boards a. selection of best face (1) sap side vs. heart-side (2) advantages/disadvantages b. parts and dimensions of a board c. steps in squaring to size	Have students square stock using scrap lumber as a review exercise.	Provide information and stock for review.	Scrap rack at school or local cabinet shop.
Students should be able to select the correct glue and clamps when constructing a project.	B. Gluing and Clamping 1. Common wood glues a. premixed (1) white glue (2) contact cement (3) liquid hide glue (4) aliphatic resin glue b. powdered glues (1) plastic resin (2) casein glue (3) animal hide c. miscellaneous glues (1) resorcinol (boat) (2) epoxy (3) model cement	Have each student select and use the proper glue for use on their project(s).	Glue sample pieces of wood and demonstrate properties such as water resistance, strength, drying times, etc.	Book 6, pp. 536-537 Book 10, pp. 108-109

OBJECTIVES	TOPICS	STUDENT ACTIVITIES	TEACHER ACTIVITIES	RESOURCES
	(4) electronic gluing (5) hot glue (gun type)			
	2. Types of clamps a. "C" clamps b. hand screw clamps c. bar clamps d. pipe clamps e. miter clamps f. spring clamps g. web clamps h. frame clamps	Have students put together a trial assembly (no glue) to demonstrate understanding of selection and usage of clamps.	Evaluate trial assembly.	
	3. Purpose of gluing wood a. increase size of boards b. join parts c. laminate d. reduce warping e. add strength		Acquaint students with methods used to construct large wood surfaces to prevent or correct warpage.	Book 10, p. 107
	4. Laminating a. definition b. uses (1) beauty (2) strength (3) stability (4) forming	Visit local church or other large building which uses laminated wood beam construction and discuss beauty, strength, and other advantages. View filmstrip on lamination.	Organize trip or showing of film and encourage discussion.	Films, texts, local building, furniture stores and/or catalogs.
Students should be able to describe the methods used for bending wood.	C. Bending 1. Uses 2. Methods a. steam b. kerfing c. combination d. green lumber e. laminating	Have students research bending wood, including methods, uses, advantages and disadvantages of each, and prepare a written or oral report.		

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OBJECTIVES	TOPICS	STUDENT ACTIVITIES	TEACHER ACTIVITIES	RESOURCES
Students should be able to identify different common kinds, uses, methods of application, advantages and disadvantages of veneers.	D. Veneers 1. Definition 2. Uses a. plywood (panels and molded)		Demonstrate gluing veneers for class.	
	b. overlay c. inlays d. marquetry	Practice gluing veneers to scrap wood. Show samples of veneered products, including each of the four uses listed.		Shop inventory, personal goods.

UNIT TITLE XI: ADVANCED FINISHING TECHNIQUES

INTRODUCTION (PURPOSE/RATIONALE/INTENTION)	UNIT GOAL(S)	GENERAL UNIT OBJECTIVES
To give students a working knowledge of the types of finishes and techniques used on wood projects.	Students will be able to identify, select, and use appropriate finishes and supplies.	Students should be able to properly select and apply the various finishing materials to wood products.

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UNIT XI: ADVANCED FINISHING TECHNIQUES 5 Hours

OBJECTIVES	TOPICS	STUDENT ACTIVITIES	TEACHER ACTIVITIES	RESOURCES
Students should:				
be able to explain the hazards of flammable finishing materials and should be able to describe specialized equipment used for ventilation and storage.	A. Finishing Safety 1. Ventilation 2. Storage a. oily rags b. finishing materials	Tour of finishing facilities. Research and prepare a short written report on spontaneous combustion.	Provide students with a list of flammable materials which may be encountered in a woodworking lab.	Appendix 2.
know the procedure for preparing a wood surface for finishing.	B. Surface Glue Elimination 1. Applying correct amount of glue 2. Removal procedures a. wiping excess with wet cloth before drying b. scraping surface c. sanding		Using a piece of scrap wood, show the students how smeared glue will affect the finishing procedure.	Book 6, p. 786
	C. Surface Preparation 1. Planing to smooth mill marks 2. Scraping (curly grained woods)	Use project to demonstrate understanding of techniques used for surface preparation.	Provide the students with a study guide listing the types of abrasives and the range of grit sizes available.	Book 18, pp. 252-255
	3. Sanding a. beginning with coarsest grade necessary b. progressing to finer grades c. final sanding with grain	Using scrap wood, have the students put several scratches on a board and remove them by scraping and sanding.	Show students how to correctly tear abrasive sheets in workable pieces.	
	4. Bleaching a. purpose b. procedure		Stress the dangers and advantages and disadvantages of bleaches.	Book 6, pp. 788-790
	5. Grain raising a. purpose b. procedure		Show students the effects of water on wood in relation to grain raising.	

OBJECTIVES	TOPICS	STUDENT ACTIVITIES	TEACHER ACTIVITIES	RESOURCES
	6. Distressing a. purpose b. procedure		Show different articles used to distress furniture.	Book 6, pp 820-821
	7. Wash coat a. purpose b. procedure			Book 6, pp 806-807
	8. Patching and repairing a. steaming, dents b. crack, defects, and nail holes	Have the students dent scrap wood and remove the dents using an iron, hair dryer, water, etc.	Show the students how to remove dents from wood.	
	(1) wood putty (2) plastic wood (3) wood plugs and patches (4) glue and sawdust (5) spackling		Show the students how to use fillers, plugs, etc. to fill holes and dents.	
Students should be familiar with the types of finishing materials and have a working knowledge of each.	D. Finishes 1. Opaque a. definition b. purpose c. specific preparation and application	Develop and demonstrate skills using opaque finishes by painting shop equipment, cabinets, or their school plant facilities.	Arrange jobs with the school or community.	Book 10, pp 38-39 Book 14, pp 132-133
	d. types (1) paints (2) enamels	One or more students may demonstrate the technique for cleaning brushes used with different opaque finishes.		Book 9, pp 819-821
	(3) epoxies	Use on projects.	Show usage, advantages and disadvantages.	Book 17, pp 36-37
	(4) lacquers (colored) (5) acrylics 2. Transparent a. definition	Research and prepare a report explaining the differences between types of transparent finishes.	Discuss the effects of weather on finishing.	
	b. purpose c. specific preparation and application			
	d. types (1) varnishes (2) lacquers (3) epoxies (4) shellac (5) sealers	Using scrap wood, apply different types of transparent finishes to demonstrate their effects.		Book 9, pp 810-813

OBJECTIVES	TOPICS	STUDENT ACTIVITIES	TEACHER ACTIVITIES	RESOURCES
	E. Solvents 1. Definition 2. Types and uses a. turpentine b. alcohol c. lacquer thinner	List or prepare a chart indicating which solvent is used to thin or clean-up each type of finish.	Emphasize the importance of using the correct solvent for each finish.	Manufacturers labels Appendix 1 Book 18, p. 266
	d. paint thinners e. mineral spirits (varsol, kerosene, etc.) f. water	Clean finish applicator with proper solvent.	Stress safety involving solvents.	Shop catalogs
	F. Finishing Materials 1. Uses and applications	List the supplies and materials required to finish a project.	Conduct a tour of the finishing area.	
	2. Types a. bleaches b. stains		Display selected finishing materials.	Newspaper ads
	(1) oils (2) water (3) spirit	Practice with each type of stain and explain the differences and similarities in appearance and application.	Prepare study guide on the purposes, uses and effects of different stains on wood (i.e. making an inexpensive wood such as red gum appear as walnut).	Book 18, p 261 Local paint store
	c. sealers/wash coats d. fillers	List woods which require a wood filler. Apply a filler to a piece of scrap wood.	Apply filler to a piece of scrap wood to demonstrate use.	Book 6, pp 816-820
	e. linseed oil		Demonstrate linseed oil to prevent overstaining or end grain.	Book 6, p 814
	f. tung oil g. tinting base h. oil colors i. powder stains and dyes		Demonstrate matching or darkening stains.	Book 6, pp 814, 826-827

OBJECTIVES	TOPICS	STUDENT ACTIVITIES	TEACHER ACTIVITIES	RESOURCES
	G. Finishing Supplies 1. Uses and applications 2. Types a. brushes	Distinguish between a high quality brush and a low quality brush.		
	b. rottenstone c. pumice stone d. rubbing oil e. rubbing compound f. polishing compound g. steel wool h. wet/dry abrasives	Use any or all of the polishing materials on a project.	Demonstrate the use of polishing materials.	Book 6, p 802
	H. Methods of Finishing 1. Brush 2. Hand rubbed	Use any or all of the different finishing methods on project(s).	Demonstrate the different methods of applying a finish by brushing, rubbing, and spraying.	Book 17, pp 153-155
	3. Spraying	Identify: the materials used for spraying. the different types of spray guns.		
		the main parts and adjustments found on a spray gun.	Disassemble and clean a spraygun to demonstrate proper care and cleaning techniques.	Book 17, pp 160-161
			Discuss problems which may be encountered with spraying, and possible solutions.	Book 19, p 490

UNIT XII: OCCUPATIONAL INFORMATION

INTRODUCTION (PURPOSE/RATIONALE/INTENTION)	UNIT GOAL(S)	GENERAL UNIT OBJECTIVES
To provide vocational information and suggest sources of occupational guidance.	Students will compare occupations related to woodworking.	Students should be able to: 1. make occupational decisions related to the wood industries. 2. write a resume. 3. know how to present himself/herself for a good interview for employment.

UNIT XII: OCCUPATIONAL INFORMATION 5 Hours

OBJECTIVES	TOPICS	STUDENT ACTIVITIES	TEACHER ACTIVITIES	RESOURCES
Students should be able to: distinguish between the various levels of career opportunities available to him/her. write a resume. know how to present himself/herself for a good interview.	A. The Wood Industry 1. Construction a. housing b. office buildings c. bridges d. schools e. churches	Have students visit job sites where construction is taking place. Have students choose one of these areas and do a report during class.	Prepare a field trip to local construction sites, manufacturing plants, employment offices, etc. Work with guidance counselors to arrange career guidance.	Local construction site
	2. Manufacturing a. furniture b. cabinets c. doors d. windows	Have students visit local manufacturing operations.		
	3. Service a. repairs b. engineering c. architects	Select a student to visit one of these areas and give a report of his visit to the class.		
	4. Transportation a. logs b. lumber c. product	List the methods used for transporting logs to the sawmill.	Discuss with the students the old methods of transporting logs as compared to the new method.	Book 7, p. 335
	B. Career Opportunity 1. Personality 2. Mental abilities 3. Physical abilities 4. Interests 5. Job requirements	One student will be assigned the role of an employer as another student is assigned the role of the prospective employee. After this exchange is demonstrated, members of the class will evaluate the mock interview.	Discuss with the students the importance of being truthful to his employer.	
	C. Job Classifications 1. Unskilled a. no required training b. physical c. material moving/handling	Visit local branch office of Louisiana Department of Labor Job Service or have representative visit classes.		

OBJECTIVES	TOPICS	STUDENT ACTIVITIES	TEACHER ACTIVITIES	RESOURCES
	2. Semi-skilled a. some special training b. O.J.T. c. machine operators	Have a local personnel director from industry come and speak to your class about what he looks for in a potential employee.	Work with the Louisiana Association for Business and Industry in obtaining the guest speaker.	Louisiana Association for Business and Industry. Local Chamber of Commerce
	3. Skilled a. craftsman/tradesman b. performs all tasks of the trade c. journeymen (1) apprenticeship (2) classroom instruction d. skilled crafts (1) carpentry (2) cabinetmaking (3) pattern making	Have representative from local chapter of a trade union discuss apprenticeship with classes.	Visit a construction site that has an apprenticeship program - ex. bricklaying.	Large construction site
	4. Semiprofessional a. forester b. engineer c. architect d. furniture designer e. real estate broker f. banker g. management h. teachers	Have students prepare a resume for employment.		Appendix 3
		Visit local employment office. Have personnel director from local plant discuss their hiring practices.	Explain the difference between the employment services and the employment services of the agency. Work with the guidance counselors to arrange this visit.	Local plants (ex. Petro chemical/chemicals, and manufacturing.

APPENDIX 1

BASIC WOODWORKING EQUIPMENT (SUGGESTED INVENTORY)

BASIC WOODWORKING EQUIPMENT (SUGGESTED INVENTORY)

NUMBER	DESCRIPTION
1	Tool Grinder (Bench)
1	10" Tilting Arbor Circular Saw
1	6" Jointer or Uniplane
1	18" Planer (Surfacer)
1	15" Drill Press
2	12" Wood Lathes
2	24" Scroll Saws
1	14" Band Saw
1	Shop Vacuum (Wet/Dry)
1	Belt Sander, 3"x 24"
1	Finishing Sander (Vibrating)
1	Router
1	Saber Saw
1	7" Circular Saw, Portable
1	Dado Set (Table Saw)
1	Molding Head and Knives
2	Turning Chisel Sets (Lathe)
1	Router Bits (Carbide) Assorted--(Router)
1	Miter Box and Saw
24	Vises, Woodworking
6	Workbenches, 4 Station
2	Metal Storage Cabinet (Flammable Materials)
1	Safety Container (Oily Wastes)
2	5 gal. Safety Fluid Container
24	Safety Goggles
6	Safety Face Shields
1	First-Aid Kit
24	Hearing Protectors/Plugs
4	Dust Masks (Throw Away Type)
1	Exhaust System to remove dust, fumes, etc.
2	Eagle Oilers
1	Norton Soft Arkansas Stone

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BASIC WOODWORKING TOOLS (SUGGESTED INVENTORY)

NUMBER	DESCRIPTION
4	Awls, 6" Scratch
2	Bevel-T, 8" Sliding
2	Bits, Auger #4-#16 Sets (1/4"-1")
1	Bit, Expansive
1	Bits, Spade (set), 3/8"-1"
1	bits, Twist drill set (1/16" by 1/2" by 64ths)
2	Braces, Bit
2	Bits, Countersink
2	Bits, Screwdriver (3/8" & 1/2")
12	Brushes, Bench (1/2, 3/4 & 1")
2	Calipers, 8" O.S.
2	Calipers, 8" I.S.
2	Chisel, Sets 1/4" - 1"
1	Chisel, Carving Set
4	Cord, Extension - 25'
10	Clamps, Bar (3' - 5')
12	Clamps, Hardscrew
6	Clamps, "C" (12", 8", 4")
4	Clamps, Strap
1	Dividers, 8"
6	Files, Wood (Double-Cut), 10"
4	Files, Mill, 10"
2	Files, Saw (3-corner), 6"
2	File, Surform, 10"
2	File, Rasp
12	File Handles
12	File cards
4	Hammer, Claw 7 oz.
6	Hammer, Claw 13 oz.
2	Hammer, Claw 16 oz.
2	Hand Drills
1	Doweling Jig
2	Plug Cutters, 3/8" & 1/2"
6	Putty Knives
6	Knives, Utility 6"
1	Level, 24"
4	Mallets, Wood

NUMBER	DESCRIPTION
4	Planes, Block 6"
1	Pliers, Side Cutter 7"
1	Pliers, Needle-nose 6"
6	Pliers, Adjustable
2	Pliers, Vise-grip
12	Rules, Bench - 24"
4	Rules, Folding (or Tapes)
6	Saws, Back
6	Saws, C.C. 10 pt.
4	Saws, Rip 5 1/2 pt.
2	Saws, Dovetail
1	Saw, Compass
4	Saw, Coping
1	Screwdriver Set, Standard Tip
1	Screwdriver Set, Phillips Tip
2	Screw-Mate Set
4	Squares, 24" Framing
2	Squares, 12" Steel
2	Squares, Combination 12"
6	Squares, Try 8"
1	Wrench, Adjustable 10"
1	Wrench, Set, Std. open end and boxed end
1	Soldering Gun, 100 Watts
1	Combination Square Set (Try, Protractor, and Center)
1	Trammel Point Set
1	Set of Miter Clamps
1	Hacksaw
1	Mallet, Rubber
6	Nail Set
6	Planes, Jack 14"
2	Planes, Smooth 9"

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BASIC WOODWORKING SUPPLIES/MATERIALS (SUGGESTED INVENTORY)

(Per section of 24 Students)

SUPPLIES/MATERIALS	QUANTITY	OTHER
1" Lumber	250 BF	Any Combination
1/4" Plywood	2 Sheets	Any Combination
1/2" Plywood	2 Sheets	Any Combination
Stain	4 gallons	Walnut, Mahogany, Oak
Shellac/or Sanding Sealer	6 quarts	
Clear Finish	8 quarts	Varnish, Deft, Urethane
Paint	4 quarts	White, Black, Etc.
Filler, Paste	1 quart	
Patching Putty	2 pounds	
Abrasive Paper	3 sleeves (300 sheets)	Extra fine, Fine, Medium
Steel Wool	2 pounds	0000-0
Paste Wax	2 pounds	
Sander Belts	10	Fine, Medium, Coarse
Coping Saw Blades	100	10, 12, 14 teeth
Scroll Saw Blades	100	10, 12, 14 teeth
Saber Saw Blades	30	Fine, Medium, Coarse
Lube Oil	1 quart	30 wt.
Kerosene/Varsol	5 gallons	

BASIC WOODWORKING SUPPLIES/MATERIALS (SUGGESTED INVENTORY)

(Per section of 24 Students)

SUPPLIES/MATERIALS	QUANTITY	OTHERS
FH Wood Screws	4 boxes 100	1/2" #4, 3/4" #6, 3/4" #8, 1" #8
FH Wood Screws	3 boxes 100	1 1/4" #9, 1 1/2" #10, 2" #10
White Glue (liquid)	6 pints	Weldwood, Titebond or equal
Plastic Resin Glue (powder)	4 pounds	Water Resistant
Rubbing Compound	2 pounds	Or Pumice Stone
Polishing Compound	2 pounds	Or Rotten Stone
Turpentine	2 gallons	Type of Thinners
Alcohol, denatured	1 gallons	Depends on selection of Finish Materials
Lacquer Thinner	1 gallon	

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INDUSTRIAL ARTS TEACHERS

SUGGESTED PREPARATIONS FOR OPENING SHOP TO STUDENTS

Shop Facilities -

1. Make a visual check of the physical conditions of the shop and storerooms.
2. Check electrical switches, lights, outlets, gas, and air outlets.
3. Check fire extinguishers and fire drill instructions. Schedule a demonstration of recommended fire fighting techniques with the support of the local fire department officials.
4. Organize and display information forms to ensure effective student orientation.

Equipment - Be sure that:

1. machines are lubricated and adjusted.
2. all guards and safety equipment are in place.
3. machines are clean and in operating condition.
4. cutters and blades are sharp.

Tools - Be sure that:

1. tools are in their proper place on tool panel.
2. hand tools are sharpened and adjusted.
3. tools necessary for first demonstration are ready for use.

Supplies -

1. Have stock cut and ready for first demonstrations.

Sanitation - Be sure that:

1. there is ample supply of paper towels, soap, and wiping cloths on hand.
2. a clean shop coat is available.
3. school supplies/aprons are clean and in place.
4. eye safety devices are cleaned and sanitized.
5. there is sufficient supply of brooms and brushes.
6. wash-up and drinking facilities are clean and in working order.

Teaching Materials - Be sure that:

1. films are ordered and confirmed.
2. ample supply of chalk and erasers is available.
3. audiovisual equipment for first lesson is on hand.
4. record book, teacher handbook, spare pencils, and class lists are available.

SHOP CLOSING GUIDE

Most shops and labs can be made ready for the summer recess in two or three days, if a planned program for shop closing is followed. Some of the pupils may not have time to start another project or work unit near the end of the year. These pupils can be assigned to do various activities that need to be accomplished to close the shop or lab for summer break. The instructor may prepare a list of such jobs on individual cards. Allow the students to choose the job or jobs they would like to do to complete the assigned task.

WHAT TO DO

First of all, discuss next year's assignment with your principal or supervisor. It might require that some physical changes be made in your shop. You may have to enter a supplementary requisition for additional tools and materials. (Make all your requests in writing and keep a copy on file.)

After this, consider the following checklist:

I. Shop or Lab Facilities

1. Have shop painted if necessary.
2. Fill out requests for minor repairs such as replacement of broken or cracked windows, faulty locks, damaged or frayed electric cords, and for checking and recharging fire extinguishers.

II. Equipment and Furniture

1. Check, clean, lubricate, and repair machinery.
2. Request major repairs and repair parts.
3. Remove blades and cutters from machines.
4. Oil/or wax machine surfaces to prevent rust.
5. Paint machines and furniture as necessary.
6. Repair and refinish bench tops as necessary.
7. Reline soldering, forging, and melting furnaces.
8. Shut off gas and turn off compressor. Bleed lines if necessary.
9. Conduct an inventory.

III. Tools

1. Clean, repair if needed, sharpen.
2. Construct, repair, paint tool holders.
3. Oil or wax to prevent rust.
4. Pack edge tools for sharpening--saws, blades, cutters, etc.

IV. Supplies

1. Clean and arrange storage areas.
2. Prepare requistion and/or supplementary requisitions for next year.
3. Inventory and store new supplies as they are received.

V. Sanitation

1. Clean, repair, sanitize and store safety glasses and shields.
2. Clean and sanitize safety glasses storage cabinet.
3. Inventory safety equipment.
4. Collect aprons and shop coats for laundering if your school offers this service.
5. Clean all lockers.
6. Discard useable odds and ends that have accumulated during the school year.
7. Discard supplies (paint, varnish, etc.) in cans that cannot be sealed.
8. Clean wash-up area.
9. Clean used paint brushes and discard them if they are too bad.
10. Remove all trash and rubbish.
11. Remove all volatile fluids or store in proper containers.

VI. Teaching Materials

1. Collect and store all books.
2. Return audiovisual equipment to central storage.
3. Construct, repair, and store all audiovisual material.
4. Duplicate forms, safety tests, measurement tests, etc. for next year.

5. Order paper, duplicater supplies, chalk, etc., for next year.

VII. Administration

1. Send grades, forms, requests, etc., to appropriate people or offices.
2. Complete necessary departmental reports for office.
3. Turn in study guides, course of study, handbooks, inventories, etc.
4. Tag and turn in keys.

VIII. Security

1. Lock tool storage cabinets.
2. Check and lock windows and outside doors.
3. Lock electrical panel; be sure electricity and gas have been turned off.
4. Lock storage areas.
5. Lock your desk, personal storage cabinet, and office.
6. Close and lock the shop.

COURSE EVALUATION

Purpose:

This evaluation is an effort by your instructor to ascertain his/her teaching effectiveness and the usefulness of course materials. It is designed to provide suggestions on how the course can be improved and be made more relevant to students' needs. Your cooperation will be greatly appreciated.

Instructions:

Below is a list of qualities dealing with the course and the instructor. You are asked to evaluate these qualities on a scale of four to one. Four is the highest ranking, and one is the lowest ranking. Any comments you wish to add may be included on the back of this sheet.
DO NOT SIGN THIS SHEET.

	Rankings			
	Highest			Lowest
1. The class sessions and lectures were well organized.	4	3	2	1
2. The course textbook was very helpful.	4	3	2	1
3. The course was interesting and enjoyable.	4	3	2	1
4. The course material satisfied my educational needs in this area.	4	3	2	1
5. The tests used in the course contributed to greater learning.	4	3	2	1
6. Material presented in the course was easy to learn and to apply.	4	3	2	1
7. The instructor displayed a sense of professionalism and dignity in the class.	4	3	2	1
8. The instructor seemed personable and genuinely interested in the students.	4	3	2	1
9. The instructor has a thorough knowledge of his subject matter.	4	3	2	1
10. The variety of presentation methods was good.	4	3	2	1
11. The instructor displayed a sense of humor.	4	3	2	1
12. The instructor was clear in his explanation of course material and assignments.	4	3	2	1
13. The instructor always seemed prepared for class meetings.	4	3	2	1
14. The instructor always displayed a pleasant appearance.	4	3	2	1
15. The instructor provided for all students to participate.	4	3	2	1
16. The instructor was patient and resourceful.	4	3	2	1

INDUSTRIAL ARTS FIELD TRIP

DATE: ______________________________

PLACE: ______________________________

LEAVE: ______________________ AT: ____________
SCHOOL

RETURN TO ______________________ AT: ____________
SCHOOL

FEES: (1) TRAVEL. . . . . ____________

(2) MEALS . . . . ____________

(3) ENTRY FEE . . . . . . ____________

(4) OTHER . . . . ____________

My daughter/son ______________________, has my permission to attend the Industrial Arts Field Trip to ______________ in ______________, La., on ______________.

It is my understanding that transportation will be provided by a Parish school bus and/or private car. Students will be accompanied by Industrial Arts teachers.

____
(PARENT OR GUARDIAN)

____
(DATE)

My son/daughter ______________________ has my permission to use his/her car or truck to transport student projects from ______________ ______________ High School to ______________ and back.

____
(PARENT OR GUARDIAN)

____
(DATE)

Color:

Colors should be used to create a pleasant work area (attitude) and to reduce glare. Light pastels are best for walls, partitions, and ceiling areas. There is no agreed standard for "color coding" machines or equipment, but use of different colors or shades of the same color is an excellent way to differentiate between various parts. This method can also be used to emphasize a hazardous area, point of operation or nip point, etc. Most equipment color suggestions would follow this basic ASA (American Standards Association) ZR53 color system:

Basic Unit	Gray or Green (by tradition)
Parts which may cut, crush or shock (guards)	Orange
Parts that move - or project (warning)	Yellow (or black and yellow stripes)
"Stop" Buttons or switches	Red
Unit under repair	Blue

Other color suggestions:

Fire alarm boxes, exit signs, fire extinguishers, barricade lights - danger signs	Red
First aid kits - stretcher equipment - safety signs	Green
Traffic zone markings	Black, white (or black and white stripes)
Housekeeping markings	Yellow, black and yellow

The personal system you choose must be standard throughout your laboratory. New equipment should be touched up or painted to match existing equipment.

Safety consideration is a critical requirement of facility planning and can "pre-solve" many future safety problems.

We strongly suggest that all Industrial Arts instructors use this color guide for their labs within three years after distribution of this booklet.

ABRASIVE GRADING CHART (Comparison of mesh and grit numbers)

Classification and Use	Artificial	Natural		
	Silicon carbide, aluminum oxide	Garnet	Flint (quartz)	Emery
Extra coarse (sanding coarse wood texture)	12			
	16	16(4)		
	20	20(3½)		
Very coarse (second stage in sanding wood texture)	24	24(3)		
	30	30(2½)	Extra Coarse	Very Coarse
	36	36(2)		
Coarse (third stage in sanding wood texture)	40	40(1½)		
	50	50(1)	Coarse	
Medium (removing rough sanding texture)	60	60(½)		Coarse
	80	80(0)	Medium	
	100	100(2/0)		Medium
Fine (first stage in sanding before applying finish)	120	120(3/0)		
	150	150(4/0)	Fine	Fine
	180	180(5/0)		
Very fine (second stage in sanding before applying finish)	220	220(6/0)	Extra Fine	
	240	240(7/0)		
	280	280(8/0)		
Extra fine (rubbing between finish coats)	320	320(9/0)		
	360			
	400	400(10/0)		
	500			
	600			

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SELECT THE FINISH THAT BEST SUITS YOUR NEEDS

COMMON FINISHES	MATERIALS USED ON	SOLVENT*	DRYING TIME BETWEEN COATS	CHARACTERISTICS GOOD	CHARACTERISTICS POOR
STAIN					
Water	Wood	Water	8 hrs.	Easy to use Good penetration Inexpensive	Raises the wood grain **
Vinyl	Wood	Water	1 hr.	Water cleanup Choice of colors Brush or Wipe on	
Oil	Wood	Mineral Spirits	8 hrs.	Easy to use Rich color Brush on and wipe off when desired shade is reached	
CLEAR WOOD FINISHES					
Clear Wood Finish (Deft)	Wood	Lacquer Thinner	20 min.	Can be brushed or sprayed Shows no brush marks Easy to apply Doesn't darken with age Easy touch-up Resists water, heat, and alcohol	
Acrylic (Wood Armor)	Wood	Water	1 hr.	Easy to use Water cleanup Dries clear	Two or more coats should be applied
Lacquer	Wood	Lacquer Thinner	15 min.	Usually sprayed, but can be brushed on or applied by dipping	Requires two or more coats Toxic (poisonous) fumes
Varnish, Polyurethane	Wood Metal	Mineral Spirits	24 hrs.	Clear, tough, hard Resists oil, water, and alcohol	Hard to touch-up
Shellac	Wood	Alcohol	2 hrs.	Easy to apply Good penetration Good Sealer	Poor resistance to heat Not waterproof
PENETRATING OILS					
Mineral Oil	Wood	Mineral Spirits	4 hrs.	Easy to apply Non-Toxic Good to use on cutting boards	Not permanent
Danish Oil (Watco)	Wood	Mineral Spirits	4 hrs.	Easy to apply Toughens wood surface	May discolor finish coat if not sealed
PAINT					
Enamel	Wood Metal	Mineral Spirits	12 hrs.	Waterproof Can be brushed or sprayed Tough, hard	
Latex	Wood	Water	4 hrs.	Odorless Water cleanup	
Lacquer	Metal	Lacquer	15 min.	Usually sprayed, but can be brushed on or applied by dipping Resists water, heat, and alcohol	Requires two or more coats Toxic fumes
WAX	Wood Metal Plastic	-	10 min.	Portects surface Makes the surface shine Can be used alone or applied over other finishes	

* Material used to thin the finish and for cleanup.

**Causes the wood fibers to rise up. This makes the surface rough.

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WOOD FINISHING CHART

Step #	Operation
1.	Raise the grain with water. Sand when dry.
2.	Water stain, any color.
3.	Oil stain; any color.
4.	Ivory oil stain.
5.	Bichromate of potassium.
6.	Poster paint, any color.
7.	White shellac; one thin coat.
8.	Paste wood filler; Walnut.
9.	Paste wood filler; Natural.
10.	White shellac, 4 coats.
11.	Varnish; 4 coats.
12.	Enamel; 4 coats.
13.	Sanding sealer; 3 coats.
14.	Brushing lacquer; 2 coats.
15.	Spraying lacquer. 2 coats.
16.	Linseed oil to bring out grain.
17.	Oil stain, Brown.
18.	Linseed oil; Rubbed many coats.
19.	Wood filler; Silver, Gray.
20.	Sand between coats; No. 3/0 sandpaper.
21.	Sand last coat, No. 6/0 and 3F pumice, wet in oil (Rubbing Oil)
22.	Paste wood filler; White.
23.	Maple oil stain.
24.	Steel wool, No. 2/0.
25.	Wire brush.
26.	Rottenstone and oil, with felt pad. (Rubbing Oil)
27.	Paste floor wax.
28.	Picture transfer.
29.	Shellac, rubbed, many coats.
30.	Shellac; 1 coat to hold pitch.
31.	Dextrine glue.
32.	Chlorox, or other bleaches. (Poison)
33.	Water stain, Brown.
34.	Borax solution; (Neutralizer)
35.	Flat varnish, 2 or 3 coats.
36.	Sand after second coat; No. 3/0 sandpaper.
37.	Silver gray, oil stain.
38.	Wood filler; colored to match stain.

NOTE: Rubbing oil made of 1/2 kerosene and 1/2 machine oil.

Wood		Remarks	Operation Numbers
Black Walnut	1	Light rubbed varnish finish	7 8 11 20 21 26 27
Black Walnut	2	Dark rubbed varnish finish	8 11 20 21 26 27
Black Walnut	3	Rubbed oil finish	8 18
Red Cedar	1	Light rubbed shellac finish	10 20 21 26 27
Red Cedar	2	Dark rubbed varnish finish	16 11 20 21 26 27
Red Cedar	3	Light clear lacquer finish	13 20 15 21 26 27
Gum Wood	1	Rubbed shellac on figured gum	16 10 20 21 26 27
Gum Wood	2	Walnut imitation on plain gum	1 33 24 11 20 21 26 27
Birch	1	Natural clear lacquer finish	13 14 20 21 26 27
Birch	2	Water stained rubbed varnish	1 2 24 11 20 21 26 27
Maple	1	Oil stained rubbed varnish	23 11 20 21 26 27
Maple	2	Natural rubbed shellac finish	10 20 21 26 27
Maple	3	Old English finish	1 5 24 11 20 21 26 27
Maple	4	Bleached	32 34 13 20 14 21 26 27
Mahogany	1	Water Stained rubbed varnish	1 2 24 38 11 20 21 26 27
Mahogany	2	Oil stain rubbed varnish	3 7 38 11 20 21 26 27
Mahogany	3	Spanish finish	1 33 24 22 7 27
Mahogany	4	Silver grey rubbed shellac	37 19 10 20 21 26 27
Mahogany	5	Bleached lacquer finish	32 34 22 13 20 14 21 26 27
Mahogany	6	Natural rubbed varnish finish	9 11 20 21 26 27
Quartered Oak	1	Natural rubbed varnish finish	9 11 20 21 26 27
Quartered Oak	2	Stained rubbed varnish finish	17 7 8 11 20 21 26 27
Plain Oak	3	Stained rubbed varnish finish	3 7 38 11 20 21 26 27
Red Wood	1	Natural varnish finish	11 20 21 26 27
Red Wood	2	Weathered flat varnish finish	1 5 35
Oregon Pine Or	1	Vertical grain rubbed shellac	10 20 21 26 27
Douglas Fir	2	Pickle finish flat varnish	4 35 36 20
Douglas Fir	3	Slash grain; rubbed varnish	3 30 11 20 21 26 27
Douglas Fir	4	Slash grain wire brushed	25 4 21 24 27
Sugar Pine Or	1	Natural white shellac finish	10 20 21 26 27
White Pine	2	Poster paint shellac finish	1 6 10 20 21 26 27
White Pine	3	Enamel and transfer	30 12 20 21 26 28 27
White Pine	4	Crackle finish	31 6 10

Working sketch or
drawing required with
this form.

PROJECT PLANNING

Name(s)______________________________Class/Period______________

Project Name____

Type of Project: Individual ________ Group__________ Mass Production______________

Date Begun______________ Estimated Completion Date______________

PLAN OF PROCEDURE

OPERATIONS	TOOLS REQUIRED PER OPERATION
1.	
2.	
3.	
4.	
5.	
6.	
7.	
8.	
9.	
10.	

Instructors Approval:______________________________________
Comments:____

____

____

Date Completed______________Total hours spent on project______________

Working Drawing Grade ________________Final Project Grade______________

Comments:____

____

____

THINNERS FOR FINISHING MATERIALS

FINISH	THINNER
Water Stain	Water
Oil Stain	Naphtha, Turpentine, Benzol, Lin. oil
Spirit Stain	Denatured Alcohol
Paste Wood Filler	Benzine, Turpentine
Lacquer	Lacquer Thinner
Shellac	Denatured Alcohol (190 proof)
Lacquer Sealer	Lacquer Thinner
Varnish (Oil)	Turpentine
Enamel	Turpentine
Paint (Oil Base)	Linseed Oil and Turpentine
Paint (Water Base)	Water

PROJECT BILL OF MATERIALS

PART A: Finished dimensions of assembled parts. *Parts layout sheet (graph paper etc.) recommended.

Part #	No. of Pcs.	*Finished Size and Tolerance Thk.	X	W	X	L	Type of Material

PART B: Stock Materials/Supplies

Part #	No. of Pcs.	Stock/Sizes Thk. X W X L	Material/Supplies	Unit Quality	Cost Per Unit	Total

Total Value ____________________

Less No Charges ____________________

TOTAL DUE ____________________

STUDENT'S PLAN SHEET

Student's Name ______________________________ Class ______________

Name of Project ______________ Date Started ___________ Date Completed ___________

Estimated Time ____________________ Actual time ____________________

Personal efficiency: actual time ÷ estimated time = __________

Source of drawing ____

MATERIALS REQUIRED

No. of pieces	Description and size of piece	Kind of materials	Unit Cost	Extended Cost

Tools:
1.
2.
3.
4.
5.
6.
7.
8.
9.
10.
11.
12.

Order of Procedure:
1.
2.
3.
4.
5.
6.
7.
8.
9.
10.
11.
12.
13.
14.

Approved ______________________________

PROJECT PLANNING AND EVALUATION

(Place complete working drawing on reverse side.)

Grade__________

Your name ______________________ Learner level ______________________

Project ______________________ Source of Idea ______________________

Date Begun ____________ Date Finished ____________ Cost ____________

Total Time ______________________

Instructors approval ______________________ Comments ______________________

____

____

PLANNING

MAIN OPERATIONS	TOOLS NEEDED
1. ____________	1. ____________
2. ____________	2. ____________
3. ____________	3. ____________
4. ____________	4. ____________
5. ____________	5. ____________
6. ____________	6. ____________
7. ____________	7. ____________
8. ____________	8. ____________

(Continue on separate piece of paper if more room is needed.)

MATERIAL NEEDED

Part#	No. of Pieces	Size W	Size T	Size L	Material	Unit Cost	Total Cost

TOTAL______________

PROJECT SELF EVALUATION FORM

NAME ________________________ COMPLETION TIME ________________

PROJECT ________________________ SCORE __________ GRADE ______________

CODE
4-Excellent
3-Above average
2-Average
1-Below average

I. DESIGN
- A. Functional Requirements.
  - 1. Does project serve its intended purpose? 1 2 3 4
  - 2. Does project perform , efficiently? 1 2 3 4
- B. Material Requirement.
  - 1. Does project reflect simple, direct, and practical uses of materials? 1 2 3 4
  - 2. Were materials used to their best? 1 2 3 4
  - 3. Was maximum use received from minimum materials? 1 2 3 4
  - 4. Were characteristics of materials observed? 1 2 3 4
- C. Visual Requirements.
  - 1. Does it look right; is it interesting? 1 2 3 4
  - 2. Does it exhibit good proportion and balance? 1 2 3 4

II. PLANNING
- A. Is working sketch complete and orderly? 1 2 3 4
- B. Does plan of procedure follow a logical order? 1 2 3 4
- C. Is bill of materials complete? 1 2 3 4

III. CONSTRUCTION
- A. Were safety precautions observed? 1 2 3 4
- B. Were machines properly used? 1 2 3 4
- C. How well were mistakes corrected? 1 2 3 4
- D. Did I work accurately and carefully? 1 2 3 4
- E. Was skill exhibited in the use of:
  - 1. Layout and measuring? 1 2 3 4
  - 2. Cutting tools? 1 2 3 4
  - 3. Machining? 1 2 3 4
- F. To what extent did I keep profitably busy? 1 2 3 4
- G. Did I show initative and resourcefulness? 1 2 3 4

IV. COMPLETION
- A. Is project general appearance neat and orderly? 1 2 3 4
- B. Do joints properly fit?
- C. Do dimensions of project correspond with drawing? 1 2 3 4
- D. Were materials used to best advantage? (grain matched, best faces exposed, etc.) 1 2 3 4
- E. What quality is the finish? 1 2 3 4

UNDERSTANDING FRACTIONS

1. PARTS OF A FRACTION ARE: $\frac{3}{4}\ \frac{[\text{Numerator}]}{[\text{Denominator}]}$ [Divisor Line] (N÷D)

2. ALWAYS REDUCE TO LOWEST TERMS: $\frac{8}{16}=\frac{1}{2}$

(CALCULATING FRACTIONS)

A. ADDING: (1) $\frac{1}{4}+\frac{1}{4}=\frac{2}{4}=\frac{1}{2}$ (2) $\frac{1}{2}+\frac{3}{8}=\frac{4}{8}+\frac{3}{8}=\frac{7}{8}$

(3) $\frac{3}{4}+\frac{7}{8}=\frac{6}{8}+\frac{7}{8}=\frac{13}{8}$ $(13\div 8)=1\frac{5}{8}$

B. SUBTRACTING: (1) $\frac{3}{4}-\frac{1}{8}=\frac{6}{8}-\frac{1}{8}=\frac{5}{8}$ (2) $\frac{3}{16}-\frac{1}{16}=\frac{2}{16}=\frac{1}{8}$

(2) $3\frac{3}{8}-1\frac{3}{4}=3\frac{3}{8}-1\frac{6}{8}$ ($\frac{6}{8}$ $\underline{\text{can't be subt. from}}$ $\frac{3}{8}$)

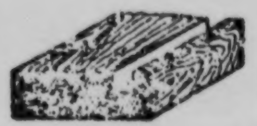
$3\frac{3}{8}\ [2+\frac{8}{8}+\frac{3}{8}]=2\frac{11}{8}-1\frac{6}{8}=1\frac{5}{8}$

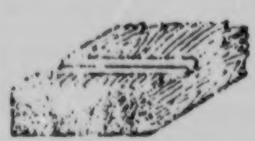
C. DIVIDING: (1) $\frac{3}{4}\div 2=\frac{3}{4}\times\frac{1}{2}=\frac{3}{8}$ (2) $\frac{7}{8}\div 2=\frac{7}{8}\times\frac{1}{2}=\frac{7}{16}$

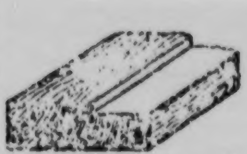
D. MULTIPLYING: (1) $\frac{3}{4}\times 2=\frac{3}{4}\times\frac{2}{1}=\frac{3}{2}=1\frac{1}{2}$ (2) $\frac{1}{4}\times\frac{1}{8}=\frac{1}{32}$

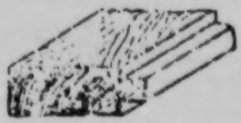
The following charts have been provided through the courtesy of Stanley Tools, Division of Education Sales, New Britain, Connecticut 06050. Used with permission of Stanley Tools.

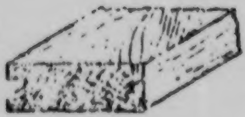
COMMON CUTS IN WOOD

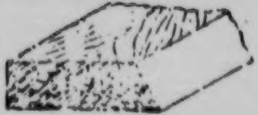

PLOW

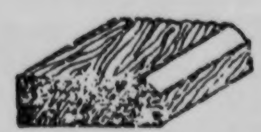

DADO

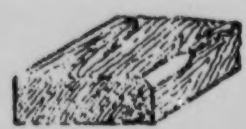

RABBET

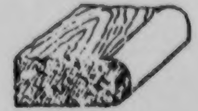

TONGUE

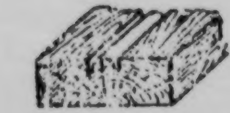

GROOVE

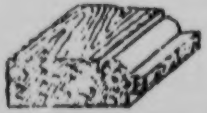

BEVEL

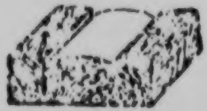

CHAMFER

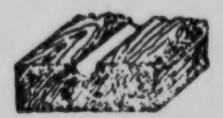

STOP CHAMFER

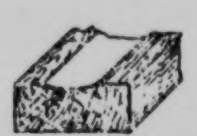

NOSING

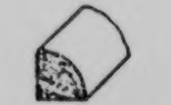

CENTER BEAD

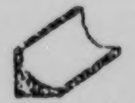

EDGE BEAD

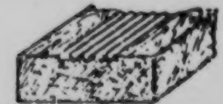

ROUND

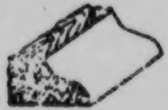

FLUTE

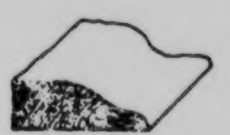

HOLLOW

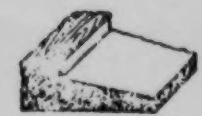

¼ ROUND

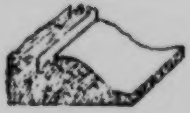

COVE OR ¼ HOLLOW

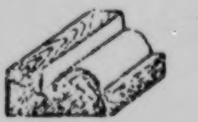

REED

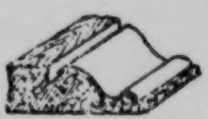

REVERSE OGEE

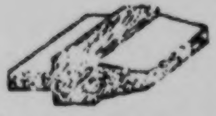

ROMAN OGEE

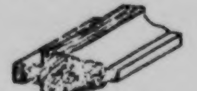

SHIP LAP

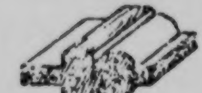

COMMON OGEE


ASTRAGAL


GRECIAN OGEE WITH BEAD


BEVEL SASH


OGEE SASH


OVALO SASH

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NEW BRITAIN CONN USA

EDUCATIONAL DEPARTMENT
CHART NO. 4

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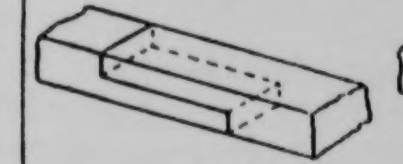
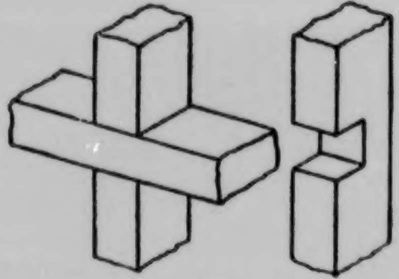
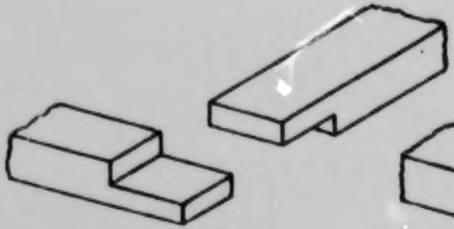
COMMON WOOD JOINTS



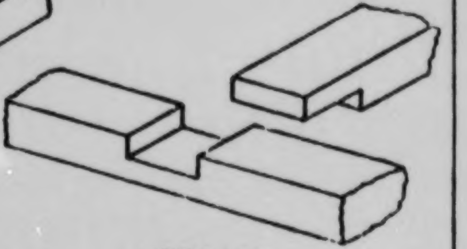
HALF LAP



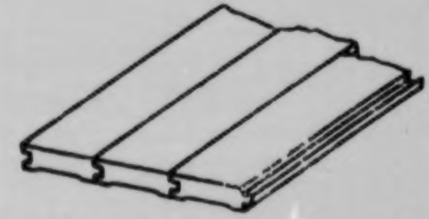
CROSS LAP



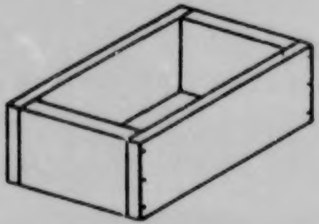
END LAP



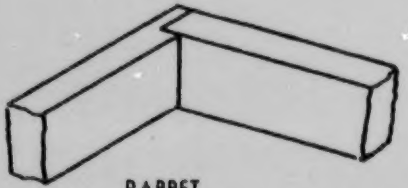
MIDDLE LAP



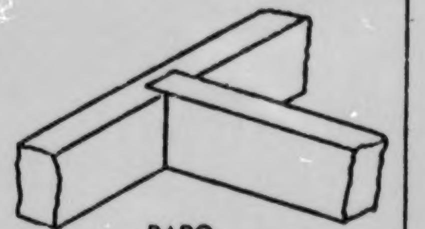
TONGUE & GROOVE



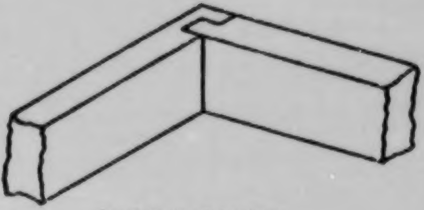
BUTT



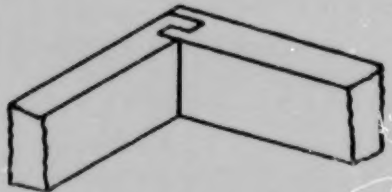
RABBET



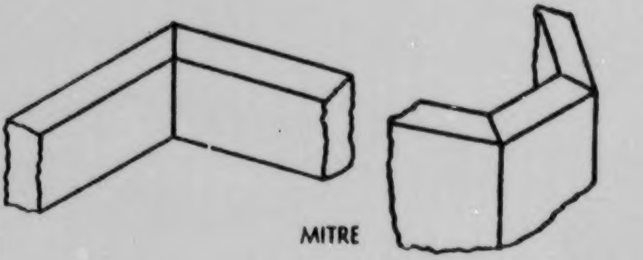
DADO



DADO & RABBET



DADO TONGUE AND RABBET



MITRE

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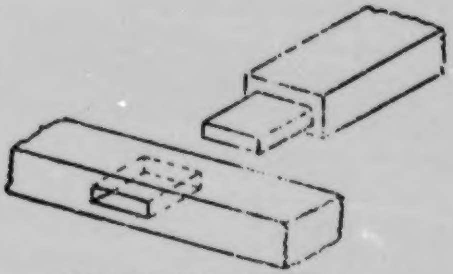
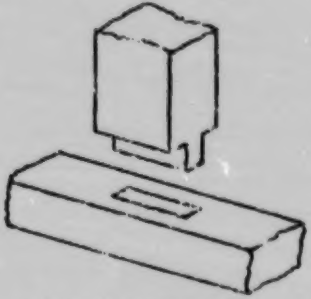
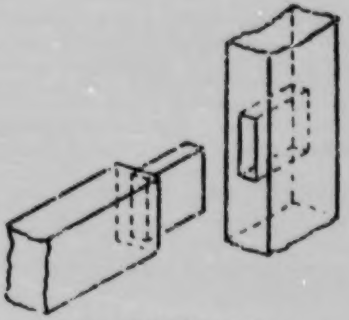
COMMON WOOD JOINTS



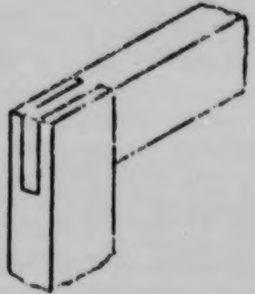
THRU MORTISE TENON



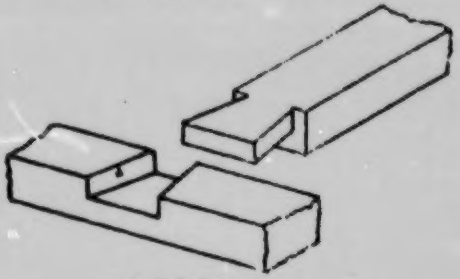
STUB MORTISE TENON



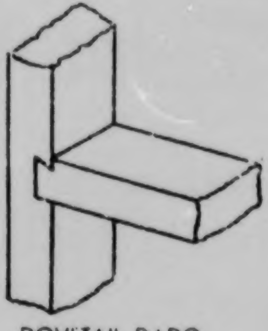
BLIND MORTISE TENON



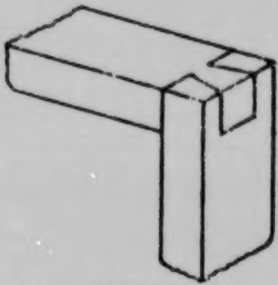
OPEN MORTISE TENON



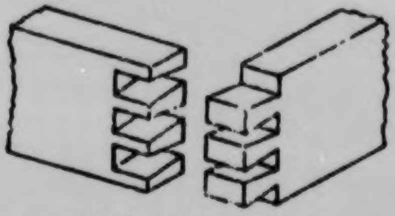
LAP DOVETAIL



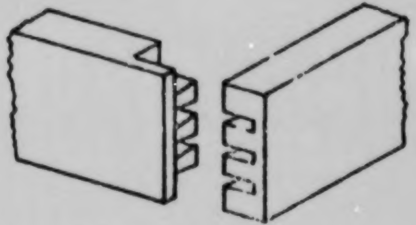
DOVETAIL DADO



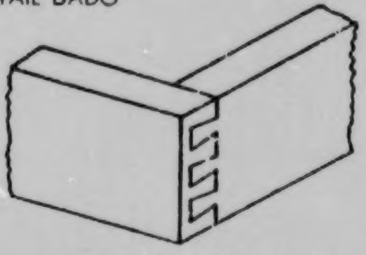
THRU SINGLE DOVETAIL



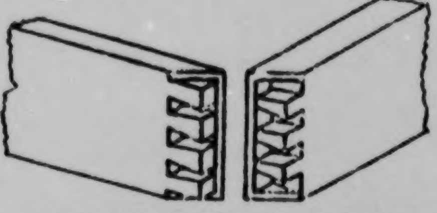
THRU MULTIPLE DOVETAIL



STOPPED LAP DOVETAIL



LAP DOVETAIL OR HALF BLIND DOVETAIL



BLIND MITRE OR SECRET DOVETAIL

STANLEY TOOLS
NEW BRITAIN CONN. U.S.A.

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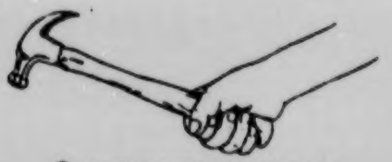
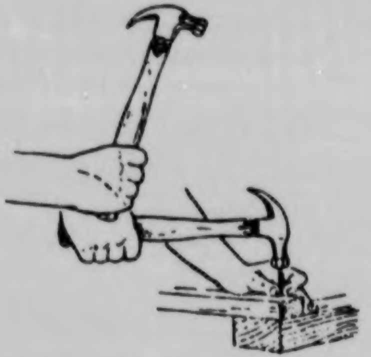
STANLEY

STANLEY

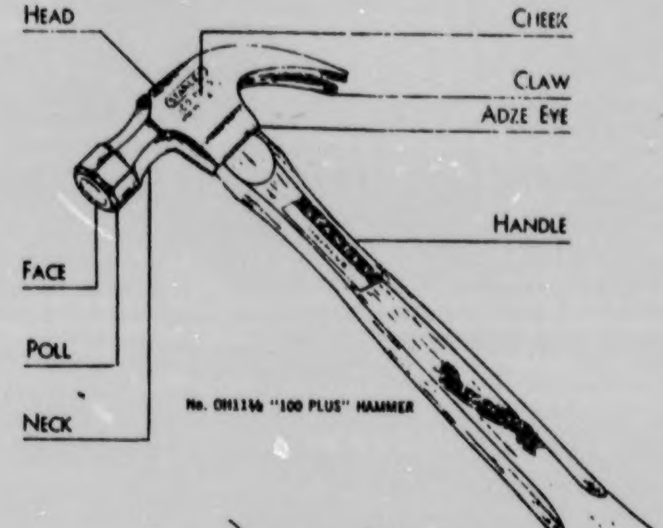
HOW TO USE
THE STANLEY NAIL HAMMER



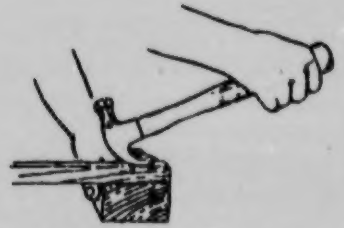
GRASP THE HAMMER FIRMLY NEAR THE END



THE BLOW IS DELIVERED THROUGH THE WRIST, THE ELBOW AND THE SHOULDER, ONE OR ALL BEING BROUGHT INTO PLAY, ACCORDING TO THE STRENGTH OF THE BLOW TO BE STRUCK. REST THE FACE OF THE HAMMER ON THE NAIL, DRAW THE HAMMER BACK AND GIVE A LIGHT TAP TO START THE NAIL AND TO DETERMINE THE AIM

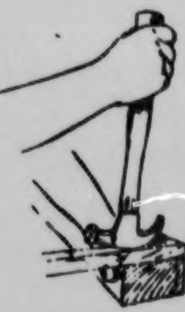


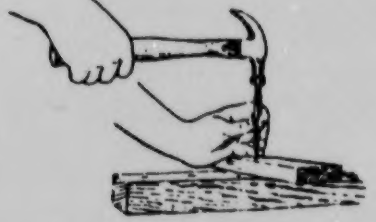
No. OH11½ "100 PLUS" HAMMER



TO DRAW A NAIL SLIP THE CLAW OF THE HAMMER UNDER THE NAIL HEAD, PULL UNTIL THE HANDLE IS NEARLY VERTICAL AND THE NAIL PARTLY DRAWN

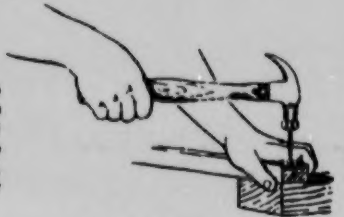
IF THE PULL IS CONTINUED, UNNECESSARY FORCE IS REQUIRED THAT WILL BEND THE NAIL, MAR THE WOOD AND PERHAPS BREAK THE HAMMER HANDLE



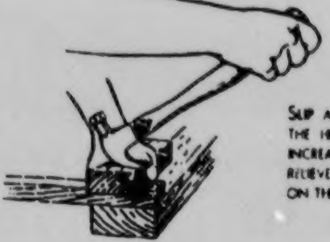


USE A NAIL SET TO DRIVE NAILS BELOW THE SURFACE OF ALL FINE WORK. TO PREVENT THE NAIL SET SLIPPING OFF THE HEAD OF THE NAIL, REST THE LITTLE FINGER ON THE WORK AND PRESS THE NAIL SET FIRMLY AGAINST IT. SET NAILS ABOUT 1/16" BELOW THE SURFACE OF THE WOOD

STRIKE THE NAIL SQUARELY TO AVOID MARRING THE WOOD AND BENDING THE NAIL. KEEP THE FACE OF THE HAMMER CLEAN TO AVOID SLIPPING OFF THE NAIL. IF A NAIL BENDS DRAW IT AND START A NEW ONE IN A NEW PLACE



ALWAYS STRIKE WITH THE FACE OF THE HAMMER. IT IS HARDENED FOR THAT PURPOSE. DO NOT DAMAGE THE FACE BY STRIKING STEEL HARDER THAN ITSELF. DO NOT STRIKE WITH THE CHEEK AS IT IS THE WEAKEST PART



SLIP A PIECE OF WOOD UNDER THE HEAD OF THE HAMMER TO INCREASE THE LEVERAGE AND TO RELIEVE THE UNNECESSARY STRAIN ON THE HANDLE

A BELL FACE HAMMER IS SLIGHTLY MORE CONVEX THAN A PLAIN FACE HAMMER. WITH IT A NAIL CAN BE DRIVEN FLUSH, OR SLIGHTLY BELOW THE SURFACE OF THE WORK, WITHOUT LEAVING HAMMER MARKS IN THE WOOD

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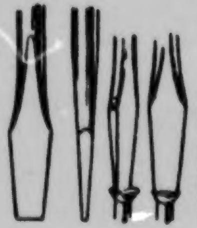
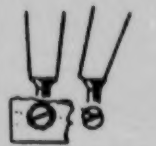
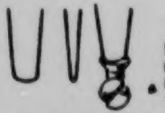
HOW TO USE
THE STANLEY SCREWDRIVER
AND INFORMATION FOR DRIVING SCREWS



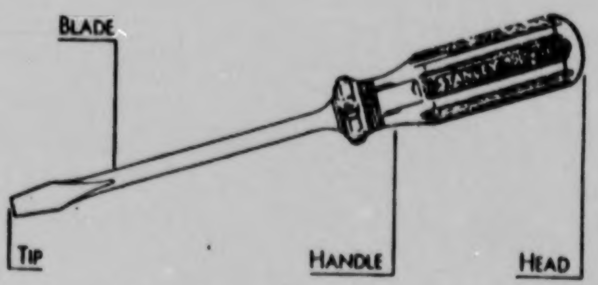
SELECT A SCREW DRIVER OF LENGTH AND TIP FITTED TO THE WORK
SCREW DRIVERS ARE SPECIFIED BY THE LENGTH OF THE BLADE
THE TIP SHOULD BE STRAIGHT AND NEARLY PARALLEL SIDED IT SHOULD ALSO FIT THE SCREW SLOT AND BE NOT WIDER THAN THE SCREW HEAD



IF THE TIP IS TOO WIDE IT WILL SCAR THE WOOD AROUND THE SCREW HEAD
IF THE SCREW DRIVER IS NOT HELD IN LINE WITH THE SCREW IT WILL SLIP OUT OF THE SLOT AND MAR BOTH THE SCREW AND THE WORK



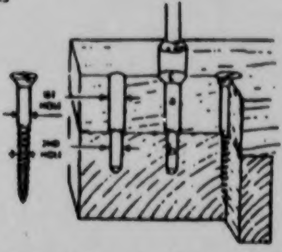
IF THE TIP IS ROUNDED OR BEVELED IT WILL RAISE OUT OF THE SLOT SPOILING THE SCREW HEAD REGRIND OR FILE THE TIP TO MAKE IT AS SHOWN ABOVE

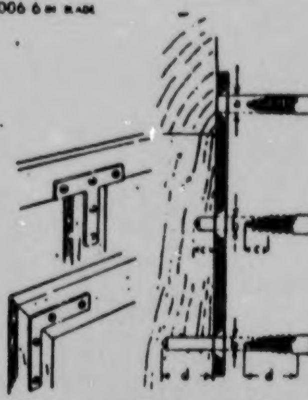


STANLEY SCREW DRIVER NO 1006 6 IN BLADE

TO FASTEN TWO PIECES OF WOOD TOGETHER WITH SCREWS:

1. LOCATE THE POSITIONS OF THE SCREW HOLES.
2. BORE THE FIRST HOLE SLIGHTLY SMALLER THAN THE THREADED PART OF THE SCREW THROUGH BOTH PIECES OF WOOD AS AT b. BORE ONLY AS DEEP AS THREE QUARTERS THE LENGTH OF THE SCREW.
3. BORE THE SECOND HOLE IN THE FIRST PIECE OF WOOD SLIGHTLY LARGER THAN THE DIAMETER OF THE SCREW SHANK, AS AT a.
4. COUNTERSINK THE FIRST HOLES TO MATCH THE DIAMETER OF THE HEADS OF THE SCREWS, AS AT c.
5. DRIVE THE SCREWS TIGHTLY IN PLACE WITH THE SCREW DRIVERS.





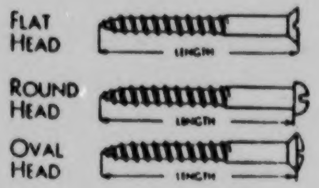
USE THE LONGEST SCREW DRIVER CONVENIENT FOR THE WORK MORE POWER CAN BE APPLIED TO A LONG SCREW DRIVER THAN A SHORT ONE, WITH LESS DANGER OF ITS SLIPPING OUT OF THE SLOT
HOLD THE HANDLE FIRMLY IN THE PALM OF THE RIGHT HAND WITH THE THUMB AND FOREFINGER GRASPING THE HANDLE NEAR THE FERRULE WITH THE LEFT HAND STEADY THE TIP AND KEEP IT PRESSED INTO THE SLOT WHILE RENEWING THE GRIP ON THE HANDLE FOR A NEW TURN

IF NO HOLE IS BORED FOR THE THREADED PART OF THE SCREW THE WOOD IS OFTEN SPLIT OR THE SCREW IS TWISTED OFF
IF A SCREW TURNS TOO HARD, BACK IT OUT AND ENLARGE THE HOLE
A LITTLE SOAP ON THE THREADS OF THE SCREW MAKES IT EASIER TO DRIVE

TO FASTEN HINGES OR OTHER HARDWARE IN PLACE WITH SCREWS

1. LOCATE THE POSITION OF THE PIECE OF HARDWARE ON THE WORK
2. RECESS THE WORK TO RECEIVE THE HARDWARE, IF IT IS NECESSARY
3. LOCATE THE POSITIONS OF THE SCREWS
4. SELECT SCREWS THAT WILL EASILY PASS THRU THE HOLES IN THE HARDWARE, AS AT a
5. BORE THE PILOT HOLES (SECOND HOLE) SLIGHTLY SMALLER THAN THE DIAMETER OF THE THREADED PART OF THE SCREWS, AS AT b
6. DRIVE THE SCREWS TIGHTLY IN PLACE

IF THE WOOD IS SOFT, BORE AS DEEP AS HALF THE LENGTH OF THE THREADED PART OF THE SCREW, AS AT c. IF THE WOOD IS HARD, (OAK), THE SCREW SOFT (BRASS), OR IF THE SCREW IS LARGE, THE HOLE MUST BE NEARLY AS DEEP AS THE SCREW, AS AT d. HOLES FOR SMALL SCREWS ARE USUALLY MADE WITH BRAD AWLS



SIZES OF BITS OR DRILLS TO BORE HOLES FOR WOOD SCREWS

		1	2	3	4	5	6	7	8*	9	10	12	14	16	18
NUMBER OF SCREW		1	2	3	4	5	6	7	8*	9	10	12	14	16	18
BODY DIAMETER OF SCREW		073	086	099	112	125	138	151	164	177	190	216	242	268	294
		5/64	3/32	3/32	7/64	1/8	9/64	5/32	11/64	11/64	3/16	7/32	15/64	17/64	19/64
FIRST HOLE	TWIST DRILL SIZE	5/64	3/32	7/64	7/64	1/8	9/64	5/32	11/64	3/16	3/16	7/32	1/4	17/64	19/64
	AUGER BIT NUMBER							3	3	3	3	4	4	5	5
SECOND HOLE	TWIST DRILL SIZE		1/16	1/16	5/64	5/64	3/32	7/64	7/64	1/8	1/8	9/64	5/32	3/16	13/64
	AUGER BIT NUMBER												3	3	4

EXACT SIZES CANNOT BE GIVEN FOR THE HOLES FOR WOOD SCREWS THE ABOVE ARE APPROXIMATELY RIGHT FOR AVERAGE NEEDS VARIATIONS IN HARD AND SOFT WOOD, MOISTURE CONTENT AND SNUG OR LOOSE FITS, IF DESIRED, SHOULD BE CONSIDERED NUMBER AND LETTER SIZES OF DRILLS ARE AVAILABLE, IF MORE EXACT SIZES ARE WANTED A TRIAL FIT IN SCRAP WOOD IS PRACTICAL

DETERMINE SCREW SHANK SIZES BY COMPARISON BELOW

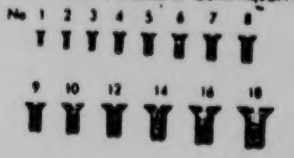


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CHART NO. 21

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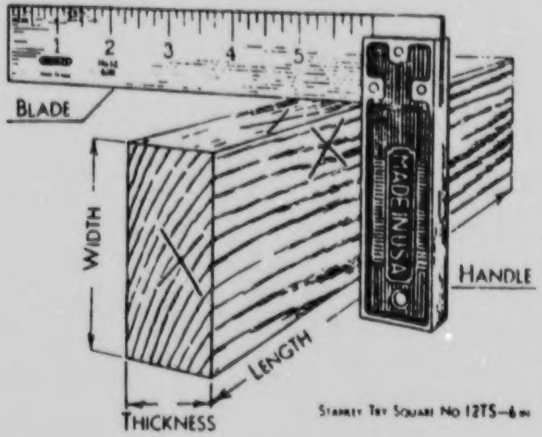
STANLEY STANLEY

HOW TO USE

THE STANLEY TRY SQUARE

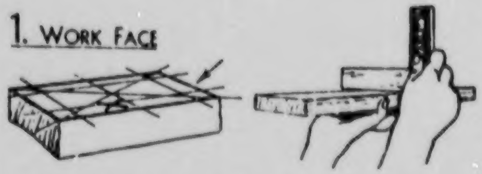
AND HOW TO SQUARE UP STOCK



Stanley Try Square No 12TS—6 in

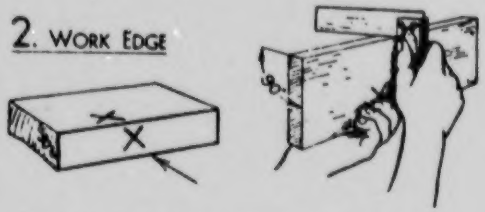
Hold the handle of the Try Square tight against the stock when testing ends, edges or scribing lines For the use of the Marking Gauge see Stanley Chart No C8 For the use of the Plane see Stanley Chart No C14

1. Work Face



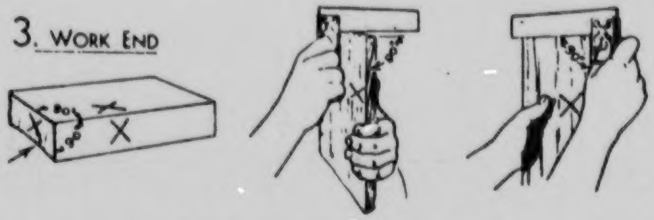
Plane one broad surface smooth and straight Test it crosswise, lengthwise, and from corner to corner Mark the Work Face X

2. Work Edge



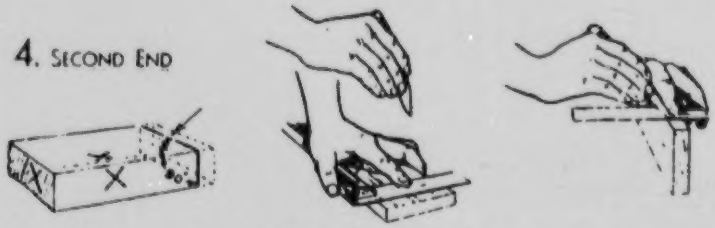
Plane one edge smooth, straight and square to the work face Test it from the Work Face Mark the Work Edge X

3. Work End



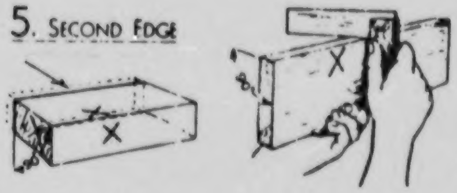
Plane one end smooth and square Test it from the Work Face and Work Edge Mark the Work End X

4. Second End



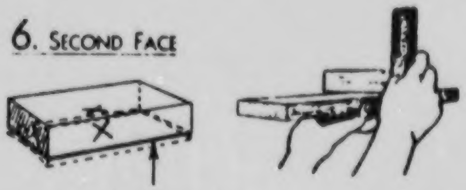
Measure length and scribe around the stock a line square to the Work Edge and Work Face Saw off excess stock near the line and plane smooth to the scribed line Test the Second End from both the Work Face and the Work Edge

5. Second Edge



From the Work Edge gauge a line for width on both faces Plane smooth straight square and to the gauge line Test the second Edge from the Work Face

6. Second Face



From the Work Face gauge a line for thickness around the stock Plane the stock to the gauge line Test the Second Face as the Work Face is tested

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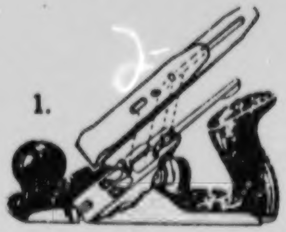
HOW TO SET THE

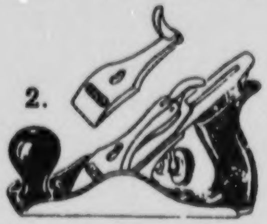
STANLEY PLANE

1.



To put the Plane together lay the Plane Iron, bevel side down, on the Frog. Be sure the Roller on the Lateral Adjusting Lever, the end of the "Y" Adjusting Lever and the head of the Plane Iron Cap Screw are correctly seated.

2.



Slip the Lever Cap under the Lever Cap Screw and press down the Cam. If the Plane Iron is in the correct position the Cam will easily snap in place. If the Cam will will not snap in place easily, slightly loosen the Lever Cap Screw.

If the Plane Iron is not firmly held when the Cam is in place slightly tighten the Lever Cap Screw.

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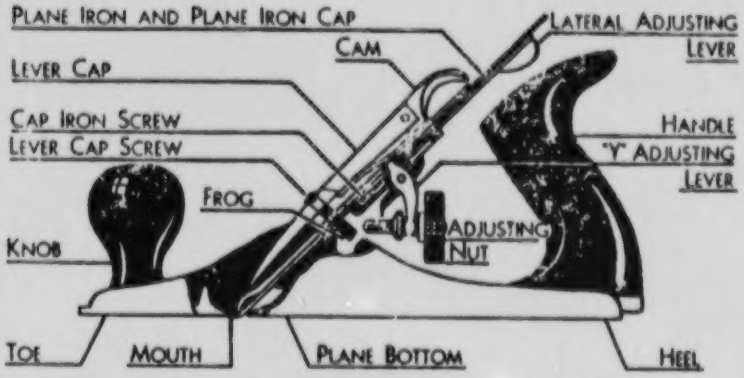
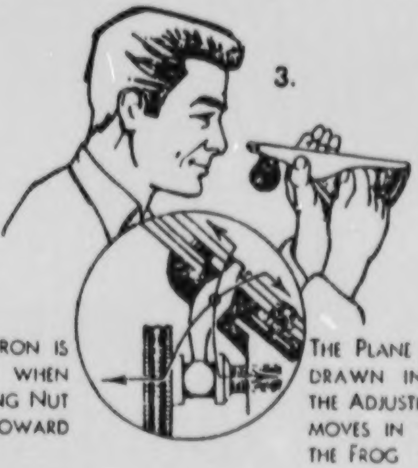
NEW BRITAIN CONN. U.S.A.



STANLEY NO. 4 OR 5

To adjust for the thickness of the shaving sight along the bottom of the Plane and turn the Adjusting Nut until the cutting edge projects about the thickness of a hair.

3.

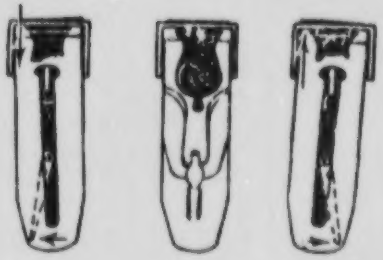


The Plane Iron is pushed out when the Adjusting Nut moves out toward the Handle

The Plane Iron is drawn in when the Adjusting Nut moves in toward the Frog

4.

To adjust for the evenness of the shaving sight along the bottom of the Plane and move the Lateral Adjusting Lever toward the right or the left.



Knob, Lever Cap and Plane Iron Cap removed to show the action of the Lateral Adjusting Lever.

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APPENDIX 2
SAFETY

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APPENDIX 2

Most of the diagrams, sample tests, guides and forms in this section were adopted from the safety Guide . . . Administrator and Instructor Section, published by the Industrial Arts section of the Washington State Department of Education, and the Safety Guide Second Edition, published by the Industrial Arts section of the Pennsylvania Department of Education.

Both of these publications are excellent sources of information and sincere thanks are extended to these two agencies for their permission to reproduce these materials.

PARENTAL PERMISSION AND ACKNOWLEDGEMENT

Parental acknowledgement of the student's activities and an awareness of the teacher's interest in the safety of the child is important. The teacher should express this interest at every opportunity.

At the beginning of each Industrial Arts course a "permission slip" should be sent home with the student for the parent's signature.

Do not misunderstand the main purpose of a "permission slip." For years, Industrial Arts teachers have used "permission slips," which were sent home and signed by the parents permitting their child to participate in the shop program. Many teachers believed that this "permission slip" relieved them of some or all of their responsibility and liability should an accident occur. IT DOES NEITHER OF THESE. The purpose of this type of communication is to:

1. Inform the parent of his/her child's participation in Industrial Arts type of activities.
2. Outline the safety instruction and procedures that are followed by the teacher and the parish.
3. Obtain from the parents relevant information regarding any health problems that may have a bearing on their child's performance.
4. List the name of the parents and telephone number(s) where they can be reached during school hours, and list the name of their family doctor.

NOTE: A card file on every student should be maintained in each Industrial Arts Laboratory.

An illustration of what this communication to the parents might look like is included on the following page.

SAMPLE SAFETY AGREEMENT

I agree to follow only those practices and procedures that are identified by the instructor as being safe. Furthermore, I agree not to use any machine in the lab until the instructor's approval is obtained. I also understand that no machine or portable electric tool is to be used unless the teacher is present.

At no time will I either distract or bother other students (or enter a machine operator's area) while a machine is being used. I further agree not to remove any guard without special permission from the instructor. In return, the instructor is expected to provide as far as possible a safe working place.

Signed ____

Date ____

PERMISSION SLIP
THE STUDENT AND SAFETY IN INDUSTRIAL ARTS

Louisiana Public School
Department of Industrial Arts

School__________________________________ Teacher__________________________
To____

Dear ____________________

_________________________(student's name) is enrolled in Basic/Advanced woodworking at _________________________________(name of school).

During the 19___-___ school year, he/she will be instructed in the safe and correct use of various hand tools, portable power tools and the following stationary power tools: Circular Saw, Jointer, Planer, Lathe, Drill Press, Scroll Saw, Band Saw, Shaper, Radial Arm Saw, Sander, and ____(other tools)

We are asking your cooperation in stressing the importance of working safely, as we believe that this will back up the instruction that is given in school.

Any student who refuses to comply with proper safety practices will not be permitted to work in the shop.

If your child has any health problems which will affect his/her participation in this class, please list them on the back of this letter.

Thank you for your consideration.

____
(Instructor's signature)

____
(Principal's signature)

. . . . Completed by Parent. . . . .

I have read and understand the preceeding letter and will stress the importance of safe participation in this class by my child.

_____________ (Date) ______________________________ (Parent's signature)

. . . . Completed by the Student. . . . .

I have read and understand the preceeding letter and I agree to abide by the safety practices as set forth by my instructor and common sense.

_____________ (Date) ______________________________ (Student's signature)

PARENT OR GUARDIAN NOTIFICATION

FROM: ______________________________ school

INSTRUCTOR: ______________________________

CLASS: ______________________________

DATE: ______________________________

STUDENT: ______________________________

PERIOD: ______________________________

SUBJECT: ACCIDENT PREVENTION

This notice is to inform you that ______________________ has repeatedly demonstrated an unwillingness to cooperate with the schools' efforts to maintain a safe environment for the students and the staff of this school. Although all students are instructed in the procedures necessary to assure their safety and the safety of those around them, ______________________ has, on numerous occasions, chosen to ignore or violate these safety procedures.

If there is no improvement in attitude and in the level of cooperation, it may become necessary to restrict this student from further participation in class activities and projects. The result may be a failing grade *or* dismissal from this class. If you wish to have a conference regarding this matter, an appointment will be scheduled if you indicate (below) that you would like the school to contact you.

Please discuss this matter with ______________________, and sign this notice indicating that you, the parent or guardian, have read the notice and that you accept full responsibility and liability in the event of personal injury or property damage resulting from your son/daughter/wards' carelessness.

Parent/Guardians' Signature: ______________________________

Date: ______________________________

☐ Yes, I would like to make an appointment to discuss this matter personally. I may be reached at ______________________ (phone number) between the hours of ______________ and ______________.

I have discussed this notice with my parent or guardian, and I understand clearly what it means.

Students' Signature: ______________________________

Date: ______________________________

Copies of this notice have been sent to the office of the principal.

HAZARDOUS CONDITIONS REPORT

This is a suggested method for reporting the hazard and directing action to see that the hazard is corrected or removed.

If a hazard exists, the operation should be "red tagged" and shut down until corrected. NOTE: This form can be used to report a student who is a hazard as well as a hazardous condition in the laboratory.

HAZARDOUS CONDITIONS FORM

Date____________________

TO:____
Principal School

Description and Location of Health or Safety Hazard:____________________

____

____

Suggested Solution:__________________________________

____

____

Teacher Signature:____________________

Distribution: Original - Principal
1st Copy - Department Head
2nd Copy - Teacher Reporting Hazard
3rd Copy - Parish Safety Officer (Vocational Supervisor)

Action Taken:____________________________________

____

____

By Whom:______________________________
Signature

STANDARD STUDENT ACCIDENT REPORT FORM

Part A. Information on ALL Accidents

1. Name: ____________________ Home Address: ____________________

2. School: ____________________ Sex: M ☐ F ☐ Age___ Grade or classification: ___

3. Time accident occurred: Hour______ A.M.; ______ P.M. Date: ____________________

4. Place of Accident: School Building ☐ School Grounds ☐ To or from School ☐ Home ☐ Elsewhere ☐

5. NATURE OF INJURY

Abrasion	___	Fracture	___
Amputation	___	Laceration	___
Asphyxiation	___	Poisoning	___
Bite	___	Puncture	___
Bruise	___	Scalds	___
Burn	___	Scratches	___
Concussion	___	Shock (el.)	___
Cut	___	Sprain	___
Dislocation	___		
Other (specify)	___		

PART OF BODY INJURED

Abdomen	___	Foot	___
Ankle	___	Hand	___
Arm	___	Head	___
Back	___	Knee	___
Chest	___	Leg	___
Ear	___	Mouth	___
Elbow	___	Nose	___
Eye	___	Scalp	___
Face	___	Tooth	___
Finger	___	Wrist	___
Other (specify)	___		

DESCRIPTION OF THE ACCIDENT

How did accident happen? What was student doing? Where was student? List specifically unsafe acts and unsafe conditions existing. Specify any tool, machine or equipment involved.

____

6. Degree of Injury: Death ☐ Permanent Impairment ☐ Temporary Disability ☐ Nondisabling ☐

7. Total number of days lost from school: _____ [illegible] be filled in when student returns to school)

Part B. Additional Information on School Jurisdiction Accidents

8. Teacher in charge when accident occurred (enter name): ____________________

Present at scene of accident: No: _____ Yes: _____

9. IMMEDIATE ACTION TAKEN

First-aid treatment ___ By (name): ____________________

Sent to school nurse ___ By (name): ____________________

Sent home ___ By (name): ____________________

Sent to physician ___ By (name): ____________________

Physician's Name: ____________________

Sent to hospital ___ By (name): ____________________

Name of Hospital: ____________________

10. Was a parent or other individual notified? No___ Yes___ When_________ How: _________

Name of parent notified: ____________________

By whom? (enter name): ____________________

11. Witnesses: 1. Name: ____________________ Address: ____________________

2. Name: ____________________ Address: ____________________

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12. LOCATION

	Specify Activity		Specify Activity	Remarks
Athletic field		Locker		What recommendations do you have for preventing other accidents of this type?
Auditorium		Pool		
Cafeteria		Sch. grounds		
Classroom		________ shop		
Corridor		Showers		
Dressing room		Stairs		
Gymnasium		Toilets & washrooms		
Home Econ.				
Laboratories		Other (specify)		

Signed: Principal ____________________ Teacher: ____________________

CAUSE: Unsafe Acts (mark basic cause)

1. ☐ operating without authority
2. ☐ operating at unsafe speed
3. ☐ making safety device inoperative
4. ☐ using unsafe equipment or equipment unsafely
5. ☐ unsafe loading, placing, mixing
6. ☐ taking unsafe position
7. ☐ working on moving or dangerous equipment
8. ☐ distraction, teasing, horseplay
9. ☐ failure to use personal protective devices

Why was the unsafe act committed? ____________

Unsafe conditions (mark contributing cause, if any)

10. ☐ inadequately guarded
11. ☐ defective tools, equipment or substance
12. ☐ hazardous arrangement
13. ☐ unsafe illumination
14. ☐ unsafe ventilation
15. ☐ unsafe clothing
16. ☐ unguarded
17. ☐ unsafe design or construction

Why did the unsafe condition exist? ____________

GUIDES TO CORRECTIVE ACTION:

Unsafe Act

1. Stop
2. Study
3. Instruct (tell--show--try--check)
4. Train
5. Maintain discipline

Unsafe Condition

1. Remove
2. Guard
3. Warn

   If supervisor can't handle, then:
4. Recommend for: (a) own supervisor, or
   (b) other supervisors, or
   (c) safety committee, or
   (d) maintenance dept., or
   (e) ____________
5. Follow up

Based on the cause checked above, indicate below the corrective action you are taking.

What have you done to prevent similar injuries? ____________

EMERGENCY TELEPHONE NUMBERS*

*Post by Phone

	NAME	TELEPHONE
Ambulance		
Fire Department		
Hospital (nearest)		
Doctor (nearest)		
Main Office		
School Nurse		
Medic I		
Poison Control Center		

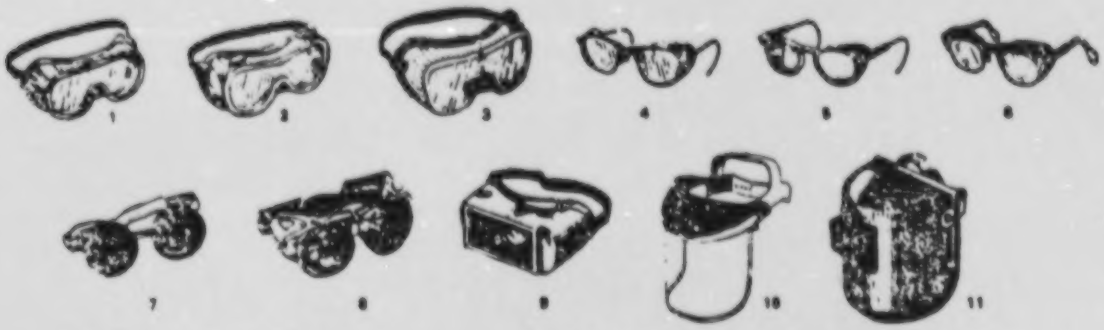
EMERGENCY COMMUNICATIONS

Procedures established for emergency situations and accidents must contain the approved method of "who tells what to whom and when." To facilitate this communication, each Industrial Arts department should have a telephone with a direct outside line (for ambulance, fire, and police emergencies). In addition:

1. All students should know the location of the telephone and be familiar with the emergency procedures and numbers.
2. All personnel in the laboratory should have access to the telephone for emergency communications. (The telephone should not be locked in the teacher's office.)
3. Emergency procedures and police, ambulance and fire department numbers and the procedure for dialing an "outside" line should be posted at each telephone location.

Selection Chart

Recommended Eye and Face Protectors for Use in Industry, Schools, and Colleges



1. **GOGGLES**, Flexible Fitting, Regular Ventilation
2. **GOGGLES**, Flexible Fitting, Hooded Ventilation
3. **GOGGLES**, Cushioned Fitting, Rigid Body
*4. **SPECTACLES**, Metal Frame, with Sideshields
*5. **SPECTACLES**, Plastic Frame, with Sideshields
*6. **SPECTACLES**, Metal-Plastic Frame, with Sideshields
** 7. **WELDING GOGGLES**, Eyecup Type, Tinted Lenses (Illustrated)
7A. **CHIPPING GOGGLES**, Eyecup Type, Clear Safety Lenses (Not Illustrated)
** 8. **WELDING GOGGLES**, Coverspec Type Tinted Lenses (Illustrated)
8A. **CHIPPING GOGGLES**, Coverspec Type, Clear Safety Lenses (Not Illustrated)
** 9. **WELDING GOGGLES**, Coverspec Type, Tinted Plate Lens
10. **FACE SHIELD** (Available with Plastic or Mesh Window)
11. **WELDING HELMETS

*Non-sideshield spectacles are available for limited hazard use requiring only frontal protection.
**See appendix chart "Selection of Shade Numbers for Welding Filters."

APPLICATIONS

OPERATION	HAZARDS	RECOMMENDED PROTECTORS: Bold Type Numbers Signify Preferred Protection
ACETYLENE—BURNING ACETYLENE—CUTTING ACETYLENE—WELDING	SPARKS, HARMFUL RAYS, MOLTEN METAL, FLYING PARTICLES	7, 8, 9
CHEMICAL HANDLING	SPLASH, ACID BURNS, FUMES	2, 10 (For severe exposure add 10 over 2)
CHIPPING	FLYING PARTICLES	1, 2, 4, 5, 6, 7A, 8A
ELECTRIC (ARC) WELDING	SPARKS, INTENSE RAYS, MOLTEN METAL	9, 11 (11 in combination with 4, 5, 6, in tinted lenses, advisable)
FURNACE OPERATIONS	GLARE, HEAT, MOLTEN METAL	7, 8, 9 (For severe exposure add 10)
GRINDING—LIGHT	FLYING PARTICLES	1, 3, 4, 5, 6, 10
GRINDING—HEAVY	FLYING PARTICLES	1, 3, 7A, 8A (For severe exposure add 10)
LABORATORY	CHEMICAL SPLASH, GLASS BREAKAGE	2 (10 when in combination with 4, 5, 6)
MACHINING	FLYING PARTICLES	1, 3, 4, 5, 6, 10
MOLTEN METALS	HEAT, GLARE, SPARKS, SPLASH	7, 8 (10 in combination with 4, 5, 6, in tinted lenses)
SPOT WELDING	FLYING PARTICLES, SPARKS	1, 3, 4, 5, 6, 10

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KNOW YOUR FIRE EXTINGUISHERS

DEPARTMENT OF LABOR UNITED STATES OF AMERICA	WATER TYPE				FOAM	CARBON DIOXIDE	DRY CHEMICAL			
							SODIUM OR POTASSIUM BICARBONATE		MULTI PURPOSE ABC	
	STORED PRESSURE	CARTRIDGE OPERATED	WATER PUMP TANK	SODA ACID	FOAM	CO 2	CARTRIDGE OPERATED	STORED PRESSURE	STORED PRESSURE	CARTRIDGE OPERATED
CLASS A FIRES WOOD PAPER, TRASH HAVING GLOWING EMBERS ORDINARY A COMBUSTIBLES	YES	OBSOLETE, UPDATE YOUR FIRE EXTINGUISHING CAPABILITY— ASK FOR "TRADE-IN UPDATE" PRICE	YES	OBSOLETE UPDATE YOUR FIRE EXTINGUISHING CAPABILITY— ASK FOR "TRADE IN UPDATE" PRICE	OBSOLETE UPDATE YOUR FIRE EXTINGUISHING CAPABILITY— ASK FOR "TRADE IN UPDATE" PRICE	NO (BUT WILL CONTROL SMALL SURFACE FIRES)	NO (BUT WILL CONTROL SMALL SURFACE FIRES)	NO (BUT WILL CONTROL SMALL SURFACE FIRES)	YES	YES
CLASS B FIRES FLAMMABLE LIQUIDS, GASOLINE, OIL, PAINTS, GREASE, ETC. FLAMMABLE B LIQUIDS	NO		NO			YES	YES	YES	YES	YES
CLASS C FIRES ELECTRICAL EQUIPMENT ELECTRICAL C EQUIPMENT	NO		NO			YES	YES	YES	YES	YES
CLASS D FIRES COMBUSTIBLE METALS COMBUSTIBLE D METALS	SPECIAL EXTINGUISHING AGENTS APPROVED BY RECOGNIZED TESTING LABORATORIES									
METHOD OF OPERATION	PULL PIN-SQUEEZE HANDLE	OBSOLETE UPDATE YOUR FIRE EXTINGUISHING CAPABILITY— ASK FOR "TRADE-IN UPDATE" PRICE	PUMP HANDLE	OBSOLETE UPDATE YOUR FIRE EXTINGUISHING CAPABILITY— ASK FOR "TRADE IN UPDATE" PRICE	OBSOLETE UPDATE YOUR FIRE EXTINGUISHING CAPABILITY— ASK FOR "TRADE IN UPDATE" PRICE	PULL PIN-SQUEEZE LEVER	RUPTURE CARTRIDGE SQUEEZE LEVER	PULL PIN SQUEEZE HANDLE	PULL PIN-SQUEEZE HANDLE	RUPTURE CARTRIDGE SQUEEZE LEVER
RANGE	30' - 40'		30' - 40'			3' - 8'	5' - 20'	5' - 20'	5' - 20'	5' - 20'
MAINTENANCE	CHECK AIR PRESSURE GAUGE MONTHLY		DISCHARGE AND FILL WITH WATER ANNUALLY			WEIGH SEMI ANNUALLY	WEIGH GAS CARTRIDGE CHECK CONDITION OF DRY CHEMICAL ANNUALLY	CHECK PRESSURE GAUGE AND CONDITION OF DRY CHEMICAL ANNUALLY	CHECK PRESSURE GAUGE AND CONDITION OF DRY CHEMICAL ANNUALLY	WEIGH GAS CARTRIDGE CHECK CONDITION OF DRY CHEMICAL ANNUALLY

NOTES:

Class D Fires - In hot metal areas which may utilize magnesium, titanium, zirconium & sodium must provide Type D extinguishers or D rated dry chemical available for use on metal fires.

It is important that the correct extinguisher is used on the proper class of fire.

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HAND TOOL SAFETY

When improperly used, even a safe tool can cause accidents. Do not assume that all students know how to identify and/or use ordinary hand tools. They should be trained to choose the proper tool for each job and to use it only for its intended purpose.

All necessary tools should be available so the student does not have to improvise. Accidents occur more often when one tool is substituted for another. Remember, it is also important to use the correct size and type of tool such as a hammer, wrench, or screwdriver.

Three major causes of hand tool accidents are:

1. Using the wrong tool for the job.
2. Using the proper tool incorrectly.
3. Using a damaged or defective tool as the result of poor inspection and maintenance practices.

SAFETY RULES FOR HAND TOOLS

1. Wear adequate eye protection devices at all times in the laboratory.
2. Select the proper size and type of tool for the job. Learn and follow the correct procedure for using each tool.
3. Cutting tools must be properly sharpened and in good condition.
4. Keep your hands free of oil and grease.
5. Handle sharp-edged and pointed tools with care; carry in such a way as to protect yourself and others.
6. Secure small or short work with a vise or clamp.
7. Never carry tools in your pockets.
8. Use tools only for the purpose for which they were intended.
9. Do not use tools with loose or cracked handles.
10. Keep punches and chisels in good condition. Mushroomed heads may chip and cause injuries.
11. Use a file only when it is equipped with a handle.
12. Never pry, hammer on, or hammer with a file; it may shatter.
13. Do not use screw drivers as chisels or pry bars.

14. The use of a "cheater" or any other means for increased leverage is hazardous. All wrenches are designed to a specific size-length-strength ratio.

15. Do not use a hard hammer on another hardened surface.

16. When finished with a tool, clean it and return it to the proper storage place.

17. Report any breakage or malfunctions to your instructor.

HOUSEKEEPING PRACTICES

1. Provide for the daily removal of all sawdust, shavings, metal cuttings and other waste material.

2. Provide properly marked boxes or bins for various kinds of scrap stock.

3. Utilize sturdy racks and bins for materials storage, arranged to keep material from falling on students and to avoid injuries from protruding objects.

4. Employ a standard procedure to keep floors free of oil, water and foreign material.

5. Provide brushes for the cleaning of equipment after each use.

6. Provide regular custodial service in addition to the end of class cleanup.

7. Prohibit the use of compressed air to clean clothing, equipment and work areas.

8. Keep walkways and work areas free of all obstructions.

9. Floor surfaces must be maintained in a "non skid" condition.

10. Utilize a student personnel organization to insure total involvement in housekeeping and a more thorough cleanup.

HOUSEKEEPING

Good housekeeping is a key item in accident prevention. It takes the cooperation of all; it can't be the responsibility of the instructor and custodian alone. An effective housekeeping program will:

1. Reduce exposures to slips and falls

2. Reduce fire hazards

3. Remind individuals of their responsibilities in keeping the laboratory clean and orderly, and

4. Organize the housekeeping effort so that everyone assumes their fair share of the task.

Good housekeeping cannot be accomplished by an occasional grand cleanup. A program must be developed for continual cleanup. The following are essential in a good housekeeping program:

1. The equipment is arranged to permit safe and efficient work practices.
2. Materials and supplies are neatly and safely stacked.
3. Sufficient waste containers are provided and used.
4. Floors are clean.
5. Combustible materials are properly disposed of or stored in approved containers.
6. Excess materials and debris are not allowed to remain on benches and in the work areas.
7. Regular inspections are made to maintain clean and orderly conditions.

Items that are necessary for good housekeeping in an industrial Arts laboratory are:

1. Adequate dust collecting system.
2. Suitable containers for scraps, shavings, chips and other waste material.
3. Adequate storage rooms, shelves, racks, and cabinets for materials and supplies.
4. Splash guards and collecting pans for all machines using oil and coolants.
5. Brooms, bench brushes, shop towels, and other cleaning equipment.

It is your responsibility to see that housekeeping tools, equipment, and supplies are properly used.

MATERIALS HANDLING

According to the National Safety Council, nearly one in four disabling injuries is directly related to materials handling activities. These accidents include such things as slips and falls while carrying objects, back injuries and hernias from improper lifting practices, chemical and heat burns from failure to use protective clothing or equipment, and mashed or amputated fingers or toes from dropped objects.

Some of the things you can do to reduce the chance of injury to yourself or others when handling materials are:

1. Use the proper aids to handle the materials, such as tongs for hot materials, block and tackle or jacks to lift extra heavy items, and blocks or wedges to keep items from rolling.
2. Don't try to lift heavy objects without help; before you lift make clear who is giving the orders.
3. Use proper lifting techniques.
4. If the material is heavy or sharp use gloves or pads to assure a better grip or to avoid cuts. Be careful of splinters when handling lumber; wear gloves to handle rough lumber.
5. Before you pick up an object be sure that the path you intend to follow is clear.
6. With heavy objects, make a "first lift" before carrying it so that you can get the feel and position.
7. With long objects, such as pipe or ladders, have someone at each end so that they can be safely guided.
8. Be careful not to drop or set heavy objects on your feet or those of other people.
9. Stack materials so that there is no danger of slipping or falling during storage or removal.

ELECTRICAL SAFETY

The use of electricity has become so common that few people realize the potential dangers of electrical energy. Most of the accidents that are caused by electricity could have been avoided if the hazard had been recognized and if action had been taken to correct the adverse condition.

The instructor must realize that any electrical circuit is a potential hazard, regardless of the amount of voltage or current present.

The nature of the injury may be affected by the frequency of the current and the kind of electrical energy. Direct current is usually considered less hazardous than alternating current as far as shock is concerned, but is more likely to produce severe burns and tissue damage. The physical condition of the victim is another factor which has a bearing on the severity of electrical shock.

Electrical accidents are caused by unsafe conditions, unsafe practices, or a combination of both.

A study of accidents in the State of California reveals that "unsafe practices were reported in four out of five accidents. Using unsafe or defective tools or equipment led the list, while failure to de-energize equipment, using tools or equipment in an unsafe manner and working in hazardous places were next in order."

Causes of electrical accidents can be traced to (1) defective equipment, (2) unsafe work practices, and (3) lack of knowledge of the dangers of electricity.

1. Defective Equipment. Types of Equipment frequently involved in electrical accidents include motor - driven equipment, control devices, portable electric tools, switches, panels, cutouts, conductors, plugs and fuses, and electric extension cords. A variety of unsafe conditions involving the different types of equipment creates many electrical hazards. Some of the common defects of tools and equipment are listed as follows:

   a. Improperly grounded equipment (ground wires missing, broken, or improperly connected);

   b. Open conduits, switch boxes, damaged or worn connections, and exposed live wires;

   c. Insulation which is defective, inadequate, worn frayed, wet, oily or deteriorated, creating short circuit possibilities and energizing equipment frames;

   d. Defective switches, receptacles, extension cords, and lamp sockets;

   e. Dirty motor windings, improperly adjusted brushes, and worn commutators;

   f. Improperly connected power tools and defective insulation in portable tools;

   g. Broken housings, loose or vibrating machine parts which might contact and energize tool or machine frames and expose "live" surfaces to operator.

2. Unsafe Practices. Unsafe practices and work procedures result in electrical accidents and fires. Some of the common unsafe acts committed in the shop are:

   a. Using ungrounded equipment and portable tools (except double insulated tools) or removing ground connections;

   b. Using defective tools or equipment in need of repair;

c. Using equipment that does not meet the approval of the Underwriters Laboratories for the intended use;

d. Unsafe cleaning of electrical panels, switch boxes, motors, and other electrical equipment with water or dangerous solvents;

e. Overloading of circuits or overfusing circuits by the use of wrong size or type of fuse;

f. Failure to use explosion-proof or other special wiring methods in hazardous locations.

g. Failure to positively lock out or otherwise de-energize and tag equipment or circuits to be worked on. Do not rely on gloves, rubber mats, etc., for electrical installation and repair.

h. Installation or extension of electrical facilities in a manner not meeting the National Electrical Code;

i. Repetitive closing of switches or circuit breakers when there is a fault on the circuit;

j. Using light duty, ungrounded extension cords for industrial service;

k. Failure to maintain clear access to electrical panels. Clearance of 30 inches is required by the Federal Code.

l. Use of extension cords in place of permanent wiring extensions;

m. Work practices that overload motors, insulation, wires or electrical accessories;

n. Disconnecting of electric cords by pulling on the cords rather than on the plug;

o. Use of metal ladders while working on electrical equipment;

p. Failure to label switch panels and boxes.

3. Lack of Knowledge: Teaching a basic understanding of electrical safety is part of an Industrial Arts Educational Program.

Ground Fault Protection - a recent development that can save lives. Devices are now readily available which give sure protection against electrocution or serious shock from defec-

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tive portable tools or cords. Their use should be encouraged in all areas, but particularly where there is a serious shock hazard from wet conditions or other conditions causing massive grounding of the student.

In summary, an adquate program for the prevention and elimination of electrical hazards must rest upon:

a. Intelligent selection and purchase of equipment;

b. Correct installation of equipment;

c. Education of students in the safe use of electrical energy;

d. Periodic inspection of equipment;

e. Regular maintenance.

FIRE SAFETY

1. Provide approved fire extinguisher in the shop area. Multi-purpose dry chemical units are most effective for general use. General purpose fire extinguishers should have at least a 2A:10 BC rating. Water back-up for extinguishers is always desirable. Mulit-purpose dry chemical can damage delicate electrical equipment. CO^2 type extinguishers eliminate that problem.

2. Fire extinguishers should be located along normal paths of travel and must not be obstructed or obscured from view.

3. Store flammable liquids in approved (Underwriters Laboratories or Factory Mutual labeled) safety containers and cabinets.

4. Provide for the bulk storage of flammable materials in an area removed from the main school building.

5. Provide Underwriters Laboratories Listed oily waste containers for oily and paint soaked rags. It is a good policy to place waste with high spontaneous combustion potential in water filled containers. (See National Fire Protection Association pamphlet 30, para. 4450, "Flammable and Combustible Liquids Code.")

6. Provide for the inspection and testing of fire extinguishers at regular intervals to ascertain that they are fully charged and in proper working condition (See National Fire Protection Phamplet 10, "Standard for Portable Fire Extinguishers" for details.) It is suggested that your school district adopt the labeling system using the Symbol Signs.

7. Provide instruction to students in the location and proper use of fire extinguishers and other fire fighting equipment.

8. Segregate oxidizers and oily material in storage. Do not use oxidizer (peroxide catalyst) containers for other purposes.

9. Post fire alarm and evacuation procedures.

10. Students should know remote shut-off valve or switch locations for gas or oil fired equipment and how to de-energize electrical equipment in an emergency.

11. Deluge showers would be desirable in all industrial arts laboratories, especially where there is danger of fire igniting clothing made of synthetic materials.

12. An approved fire blanket should be provided in each laboratory.

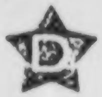
NEW FIRE EXTINGUISHER SYMBOLS

Picture symbols showing the uses for each of four types of fire extinguishers were approved for use in May, 1978. The reason for change was ease of recognition. It was felt that the old symbols, which showed a letter--A, B, or C--in a geometric shape, could be easily confused if you didn't know what the symbol meant.

The new symbols consist of three panels, each of which depicts the nature of one class of fire, and whether or not the extinguisher can be used on them.

Colors used in these symbols are important because they show at a glance the hazard for which an extinguisher is applicable. Panels printed in blue show the class of fire for which it is safe to use the extinguisher. Panels that show a class of fire on which it is dangerous to use the extinguisher are printed in black with a red slash running diagonally through the panel.

The symbol for Class "D" fires remains the same because this class of fire is rare. A class "D" fire occurs in combustible metals such as magnesium, titanium, zirconium, and sodium. The proper extinguisher must be used. Normal extinguishing agents should not be used on metal fires because there is a danger of increasing the intensity of the fire as a result of a chemical reaction.



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PERSONAL PROTECTION

1. HEAD

   A. Confine long hair so that it is not exposed to machinery.

   B. Provide hard hat where appropriate.

2. EYE-FACE

   A. Require the wearing of appropriate safety equipment where there is a danger of injury. (See ANSI Eye Protection Chart.)

3. RESPIRATORY

   A. Provide respirators for student use where harmful dusts or fumes exist. (See Respiratory guideline.)

   B. Ensure adequate ventilation for dusts, fumes, and vapors.

4. BODY PROTECTION

   A. Prohibit the wearing of loose clothing in the laboratory.

   B. Require students to remove rings and other jewelry while working in the laboratory.

   C. Provide leggings and foot protection, armlets, gloves, aprons, and shields when working with molten material.

   D. Make certain that the appropriate protective clothing is used when handling harsh materials that would cause chemical burns or lacerations.

5. HEARING

   A. Where noise levels are excessive over long periods of time, ear protection should be worn. (See Permissible Nose Exposure Table.)

   B. Engineering solutions should be sought out to remedy excessive noise problems.

   C. Monitor noise levels with a Type 2A noise level meter.

6. PERSONNEL PROTECTION CAUTIONS

   A. Determine the physical defects and limitations of all students so that they will not be assigned tasks detrimental to their health or physical condition.

B. Substitute and alternate protective fabric for asbestos garments. Asbestos is detrimental to the health of the wearer and should be avoided.

EYE PROTECTION

1. The law of the Commonwealth of Pennsylvania requires that eye protection programs be developed and implemented in all areas where there are activities potentially hazardous to the eye. (See "Act No. 116"). A procedure for adaptation for school districts is as follows:

   A. All administrators and teachers shall assess the eye exposures for which they are responsible, and recommend the appropriate protection. This recommendation shall protect students, staff members, and visitors. (See Selection Chart-American National Standards Institute Z87.1-1968)

   B. It is the responsibility of industrial arts instructors to see that eye protection is worn AT ALL TIMES in those areas that have been identified as exposure areas.

   C. Eye protection shall be supplied and maintained by the school district and lent without cost to students, staff members and visitors.

   D. The physical inspection and periodic review of the eye safety program shall be the responsibility of a designated school district administrator for ensuring the effectiveness of the eye protection program.

   Reference is also made to "American National Standard Practice for Occupational and Educational Eye and Face Protection," ANSI Z87.1-1968.

   This program shall be rigidly enforced and monitored by all concerned. There should be no deviation from the program once it is accepted and put into use.

2. Students who require corrective lenses shall be encouraged to obtain prescription safety glasses. When plain prescription glasses are worn, the student should be required also to wear an appropriate cover goggle

   Caution: Most shatter-resistant glasses do not meet the standard of ANSI and many "safety glasses" also fail the tests and design features listed.

   Contact lenses, even though covered by approved eye protection, shall not be worn in a laboratory during which an activity involving the caustic liquids or gases is taking place. If contact lenses are medically necessary and corrective glasses cannot be substituted for the lenses, a physician's statement will be required.

3. Storage and sanitation facilities shall be provided within the classroom for all eye protection. School district's have found that they had better eye protection programs when individual glasses had been provided for each student enrolled in the industrial arts class.

   Good eye protection devices require clean lenses. Lenses shall be cleaned daily.

   Pitted or scratched lenses shatter easily and impair vision and should be replaced. If a protective device is to be worn by more than one student, it will require a means of disinfection. The most effective method of disinfecting eye protective equipment is:

   A. Use ultra-violet sanitation cabinet.

   B. Thoroughly clean with soap and warm water periodically.

   C. Carefully dry with non-abrasive tissue.

4. School officials who are charged with the purchase of eye protection equipment should be aware of the various accident classifications and purchase the appropriate eye protection for each exposure. The following four groups represent the classification of all eye accidents:

   A. Potential Hazards From Impact:

      Possibly the greatest danger to the eyes is their accidental collision with flying objects. Chips from the chipper hammer or the metal working tool, the waste particles from grinding or woodworking, a broken tool or grinding wheel, or an improperly driven nail are all eye exposures that must be protected against. Plastic frame safety glasses with side shields afford maximum eye protection against impact damage.

   B. Potential Hazards from Chemical Splash:

      Protection is needed that absolutely seals the eye against any possible entry. For these conditions, flexible vinyl jumbo plate goggles with splash-proof indirect ventilators should be worn.

   C. Potential Hazards From Dust:

      As above. Where extreme dust hazards exist, plastic frame flexible goggles are more desirable. Safety glasses with side shields are also recommended.

D. Potential Hazards From Light Ray and Glare:

1. The light rays cast from welding and cutting operations can be highly injurious to unprotected eyes. Heat treating, metal pouring, steel and glass furnaces, and laser beams are other sources of glare.

2. In gas welding, cup type welding goggles with green filter lenses are most commonly used.

3. For electric welding, helmets are necessary to protect the head and eyes from infra-red and ultraviolet radiation burns, hot metals, chips, and flying sparks.

4. Contact lenses present specific hazards in the laboratory setting. The use of contact lenses should be discouraged in the lab.

5. Photocromatic and phototropic (photosun-photogray) lens. ; may not be worn as protective eyewear where hazardous infra-red or ultra-violet radiation is present.

DISCUSSION PERIOD:

Tell the class about proper maintenance of eye protection products, including storage and sanitation. Here show the safety glass monitor and start assigning glasses and storage positions.

Explain safety rules of this classroom and appoint a student "Safety Director" to help with enforcement.

Follow with questions and answers.

SHOP PRACTICES LEADING TO LIABILITY OF INSTRUCTORS

Shop Practice	Administrative practices and instructional activities designed to eliminate such practice as a factor in teacher liability.
Absence of the teacher from the shop when students are working therein.	1. Never absent yourself from the shop while students are working in the shop. 2. Have a clear understanding with your principal and/or supervisor that you are not to be called from the shop during a class session. 3. Only under extreme circumstances should an instructor absent himself from the shop. When this occurs, lock the main switch box and provide a sedentary or reading assignment to students during your absence.
Teachers leaving the shop under the supervision of a teacher who is not qualified to teach shop work.	1. Teachers are likely to be absent for a period of time because of illness or having to attend a teacher's meeting or conference. It is often the practice of school administrators to staff the shop with any instructor who has a free hour available. 2. Do not permit a substitute teacher in your shop unless he is a qualified or certified instructor. 3. If none is available, prepare written or reading assignments in advance, or some type of sedentary activity in which students will not be using the machines and equipment in the shop. Instructional movies or similar aids are practical if they fit into the instructional program.
Permitting students not enrolled in the class to use shop equipment and tools.	1. Permit only those students who have participated in your shop program or who are participating to use the shop and equipment.

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	2. No exceptions should be made to this practice. 3. Do not take the word of a student that he has had previous instruction on the tool or has had experience in its use.
Permitting students to use machines or tools or to perform activities for which instruction has not been given.	1. Make sure that proper instruction is given relative to each basic operation to be performed by a student in the shop class. 2. Permit no student to utilize a machine or tool in performing an operation for which instruction has not been given. 3. Keep an accurate instructional log as to those materials, machines and tools, and operations in which instruction has been given.
Pupils using equipment in the shop which has not been approved by the administration and board of education.	1. Allow no student to bring in any item of equipment for use in the shop. 2. Permit students to use only those items of tools and machines that have been purchased with the approval of the School Administration.
Permitting students to work in the shop free periods, particularly when the shop is not supervised.	1. Do not be absent from your shop when students are working, even during unscheduled classes or periods. 2. Permit students to utilize equipment and work in the shop during designated periods when proper supervision is given.
Permitting students to use dull tools and/or cutting devices on machines.	1. Periodically inspect all cutting edges of power tool devices and hand tools. 2. Keep all items of equipment properly maintained and sharpened.

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	3.	Demonstrate the proper maintenance and care of cutting edges of safe hand tools, particularly those jobs within the ability of the student to perform.
Permitting students to perform operations on machines without guard particularly when one could have been used.	1.	Provide proper instruction as to the use and adjustment of guards emphasizing the necessity and functions of such a device.
	2.	Set an example yourself, by using guards and safety devices at all times, and perform operations as you would want them performed by students.
	3.	Require that students use guards at all times on machines when such devices can be used.
	4.	Have students secure permission to use any item of equipment. This will permit you to check on the machines to see that all guards and safety devices are properly adjusted.
Allowing use of equipment by students who are prone to accidents or who possess physical abnormalities that may cause an accident.	1.	Be familiar with the work habits of students and with those who possess physical abnormalities that may necessitate restrictions being placed on their use of equipment.
	2.	Require all students to secure permission before the use of any item of equipment.
	3.	Limit such students to the use of machines which are within their capabilities and commensurate with whatever physical abnormalities they possess.
Sending pupils outside the shop to perform activities for the school or other departments.	1.	Do not permit any students to leave the shop to perform activities outside the department.
	2.	Refuse to undertake projects or jobs that require the student to work away from the shop without your continuous supervision.

	3.	Confine instructional and maintenance activities to those that can be performed in the shop.
Failure to keep accurate written reports relative to accidents.	1.	Prepare an accident form for your shop if the school system does not have a standard form.
	2.	Fill out the form as soon after the accident has taken place. Make multiple copies and keep one for yourself.
Failure to secure written statement from witnesses to shop accidents.	1.	Provide a place on your accident report form for the listing of witnesses.
	2.	Have witnesses write, in their own words, their views as to how the accident happened.
	3.	Have witnesses sign their signature to their statement.
Failure to administer safety tests to students in case of liable suit for negligence.	1.	Administer safety tests to students upon completion of the demonstration of a specific machine, tool,or process.
	2.	Keep tests on file in your office as evidence that such material has been covered and that a test was actually administered over material.
	3.	Set a critical score above which students must achieve in order to use a specific item of equipment. Many instructors demand a "perfect paper" prior to letting students use such equipment.
Failure of the teacher to exercise the utmost of of caution.	1.	The teacher MUST anticipate where and how an accident will occur, and use every means to eliminate the possibility of an accident.
	2.	Make every possible effort to provide the safest possible physical facilities and implement an effective safety instructional program.

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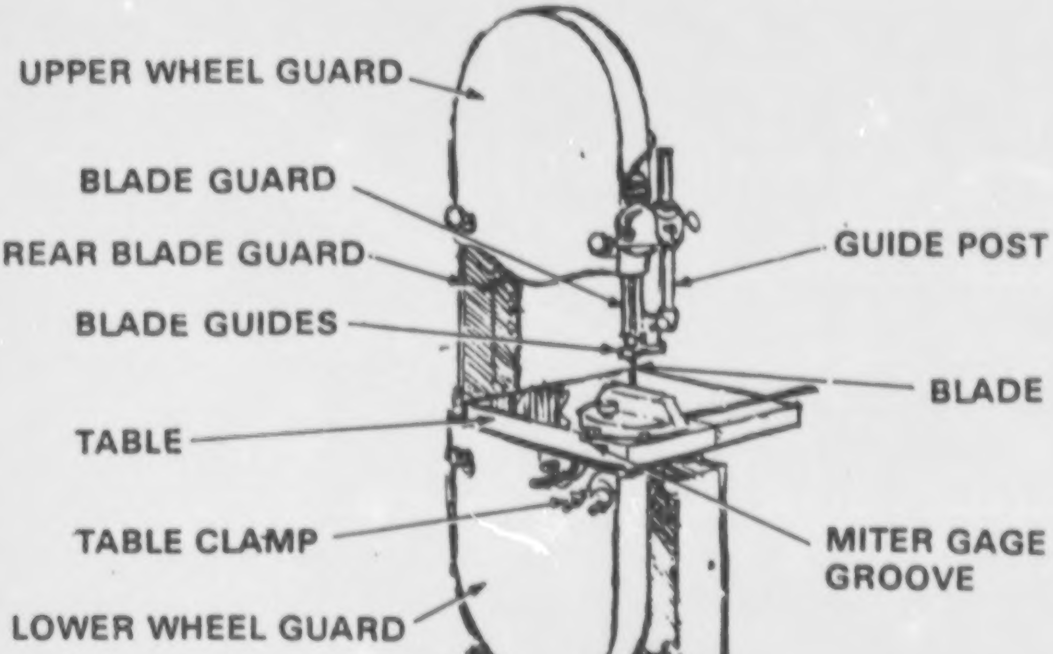
Contributory Negligence	The term "contributory negligence" can be interpreted in a very broad sense. However, the following suggestions are given with a view in mind of eliminating the possibility of a teacher being charged with "contributory negligence": 1. Maintain the safest of working conditions in the shop. 2. Insist on safe practices being adhered to at all times in the shop. 3. Provide complete and proper instruction in all aspects of shop work, with regard to the use of tools, machines, and materials. 4. Make recommendations to superiors as to improvements that can be made to improve safety conditions in the shop. 5. Make improvements suggested by your superiors. 6. Establish safety rules and enforce them. 7. Organize and implement a "complete" and continuous safety education program.
Failure to effectively administer a comprehensive eye safety program.	1. Be familiar with and conversant about eye safety legislation. 2. Require all students to wear eye protection devices at all times for laboratory activities. 3. Know the appropriate eye safety device for each operation. 4. Set an example yourself by always wearing the appropriate eye protection devices.

For Safety —

1. **Operate only with instructors permission and after you have received instruction.**
2. **Remove jewelry, eliminate loose clothing, and confine long hair.**
3. **Make sure all guards are in place and operating correctly.**
4. **Always use proper eye protection.**
5. Make sure all adjustments are tight and secure and blade guides are properly adjusted.
6. Upper blade guides should be positioned about 1/8" above the work piece.
7. Guide the work slowly, letting the machine do the work. Do not force the work into the blade.
8. Do not attempt to cut a smaller radius than the blade will allow.
9. Avoid backing out of a cut.
10. Place hands or fingers on each side of the cut line, never on the line. Use a scrap push block if necessary.
11. Never leave the machine until it has come to a full stop.



Band Saw

Name ______________________

Class ______________________

Date ______________ Grade __________

Safety Quiz

(Circle True or False)

1. The lower wheel does not require a guard. T F

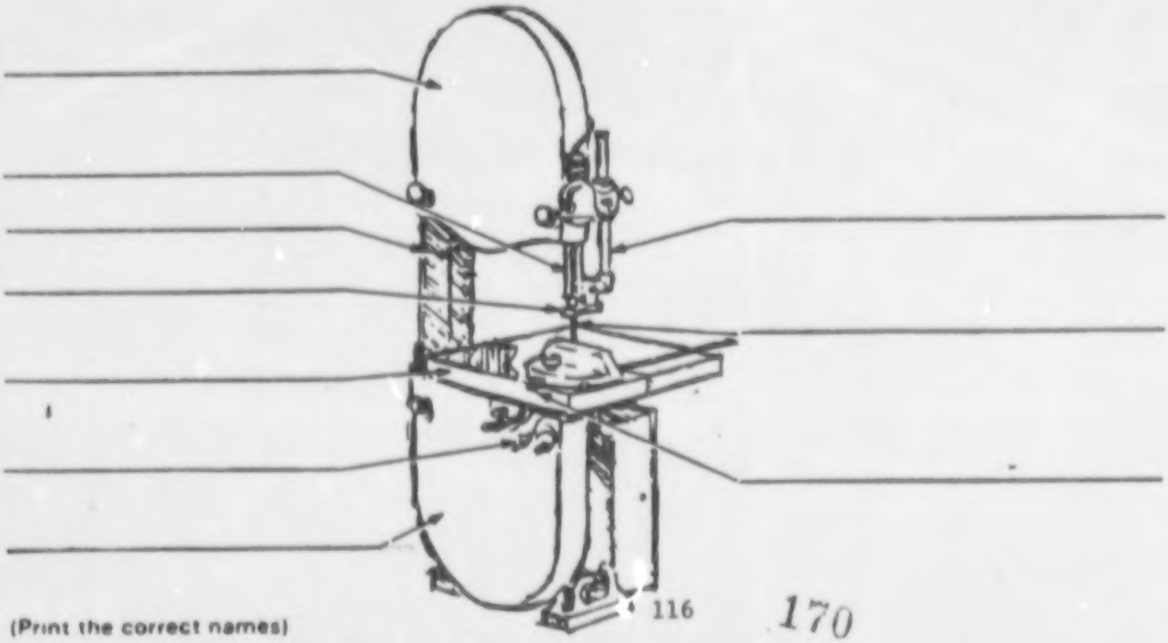
2. The upper guide should be adjusted to within 1/8" of the work piece. T F

3. All normal adjustments should be made with the power turned off. T F

4. It is permissible and safe to force the material around a tight radius. T F

5. Fingers should be placed on each side of the cut line and the material guided through the machine. T F

6. When necessary it is possible to back slowly out of a cut. T F



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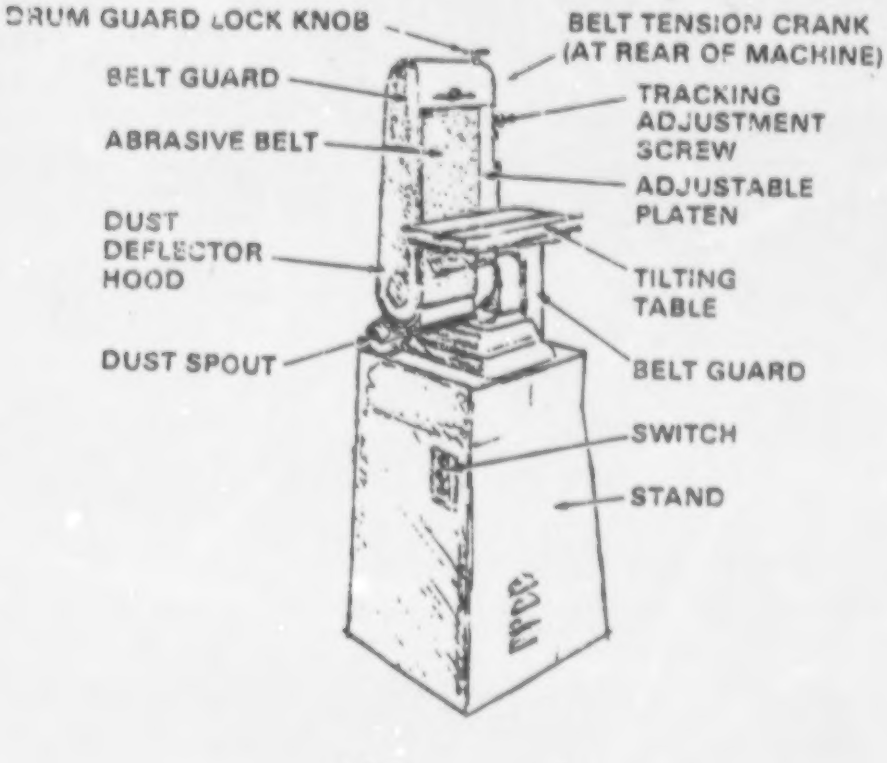
For Safety —

1. **Operate only with instructor's permission and after you have received instruction.**
2. **Remove jewelry, eliminate loose clothing, and confine long hair.**
3. **Make sure all guards are in place and operating correctly.**
4. **Always use proper eye protection.**
5. Make all adjustments except final belt tracking with the power off.
6. Make sure there is adequate strong tension on the belt and that it is not torn.
7. When changing belts make sure the new belt runs as arrows indicate.
8. The table should be adjusted to within 1/16" of the abrasive belt.
9. Keep hands clear of the abrasive belt while operating and keep material flat on the table.
10. The belt must be re-tracked if the angle of the basic machine is changed.



S

Belt Finishing Machine

Name ______________________________

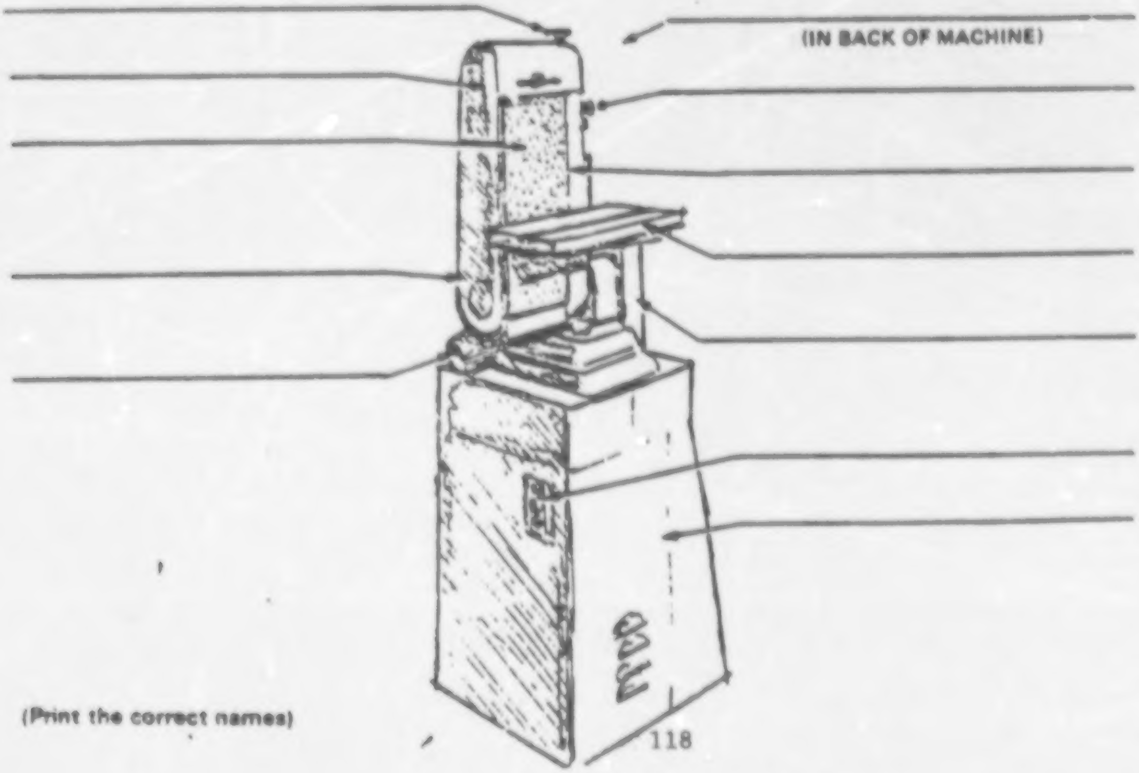
Class ______________________________

Date ____________________ Grade __________

Safety Quiz

(Circle True or False)

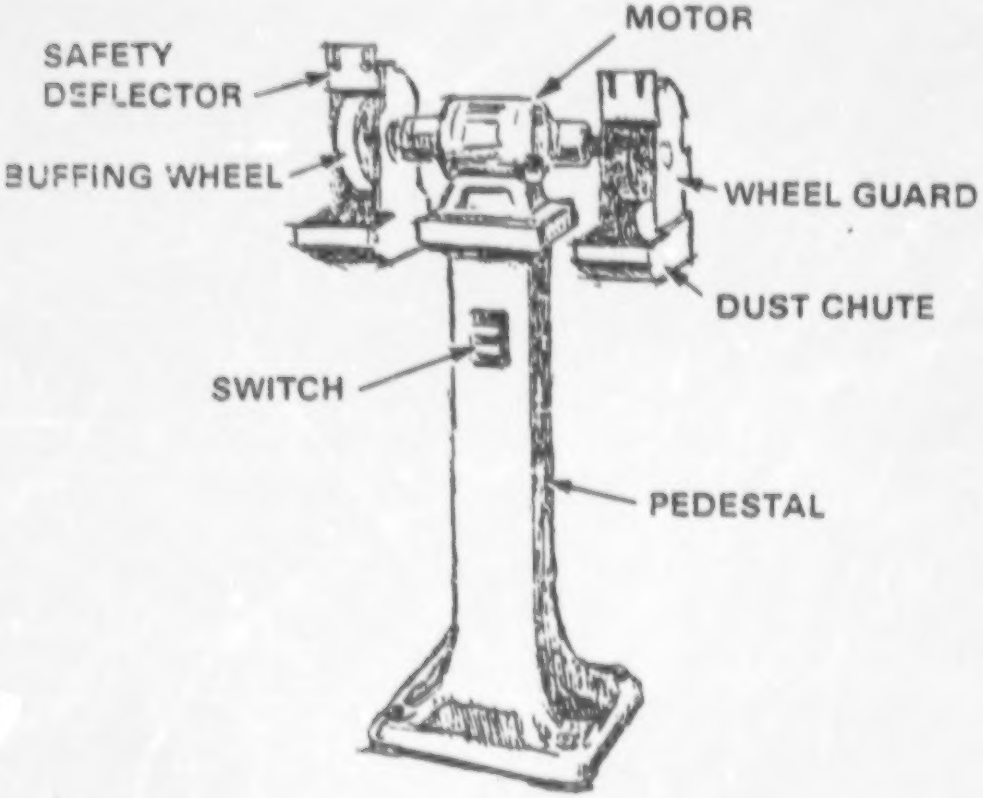
1. Material may be safely sanded in the center of the platen. T F
2. The table should be ¼'' away from the belt for adequate clearance. T F
3. If the angle of the unit is changed belt tracking should checked. T F
4. There are directional arrows inside the belt. T F
5. Tne guards cannot be removed from this machine. T F



(Print the correct names)

For Safety —

1. Operate only with instructor's permission and after you have received instruction.
2. Remove jewelry, eliminate loose clothing, and confine long hair.
3. Make sure all guards are in place and operating correctly.
4. Always use proper eye protection.
5. Always buff using the lower half of the buffing wheel.
6. Stand to one side of the wheel when buffing or applying compound.
7. Use care when buffing around corners or openings where the wheel could grab and throw the work piece.
8. Never use gloves, rags, or part of a shop coat to hold the work piece.
9. Never buff a leading edge.



Buffer

Name ______________________

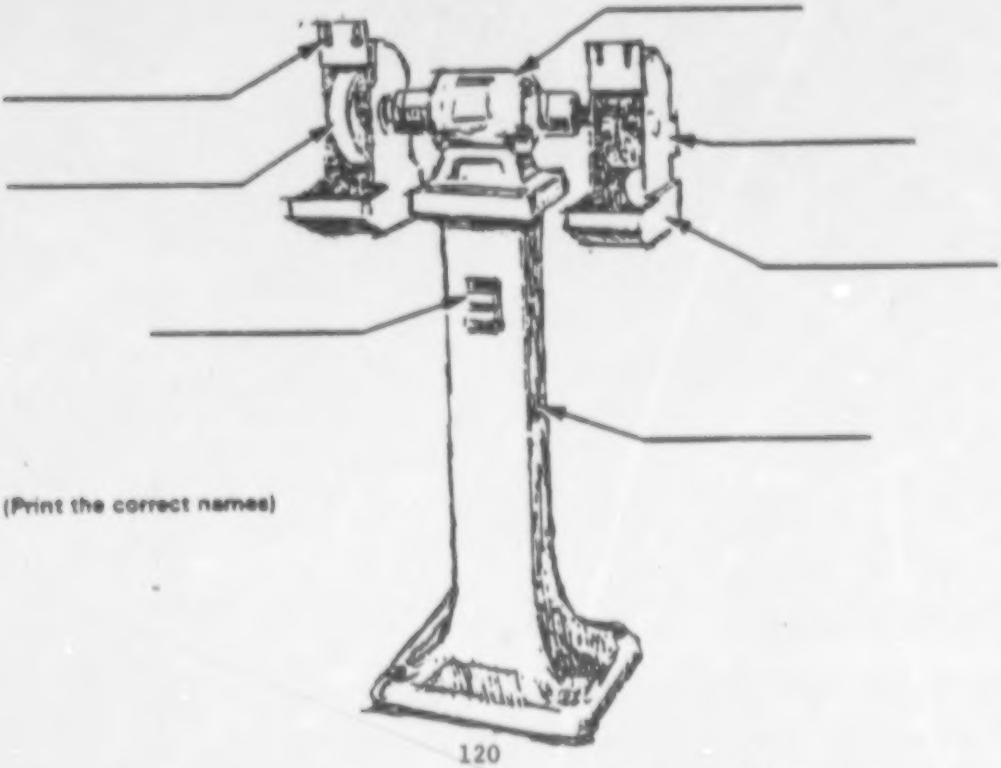
Class ______________________

Date ______________ Grade __________

Safety Quiz

(Circle True or False)

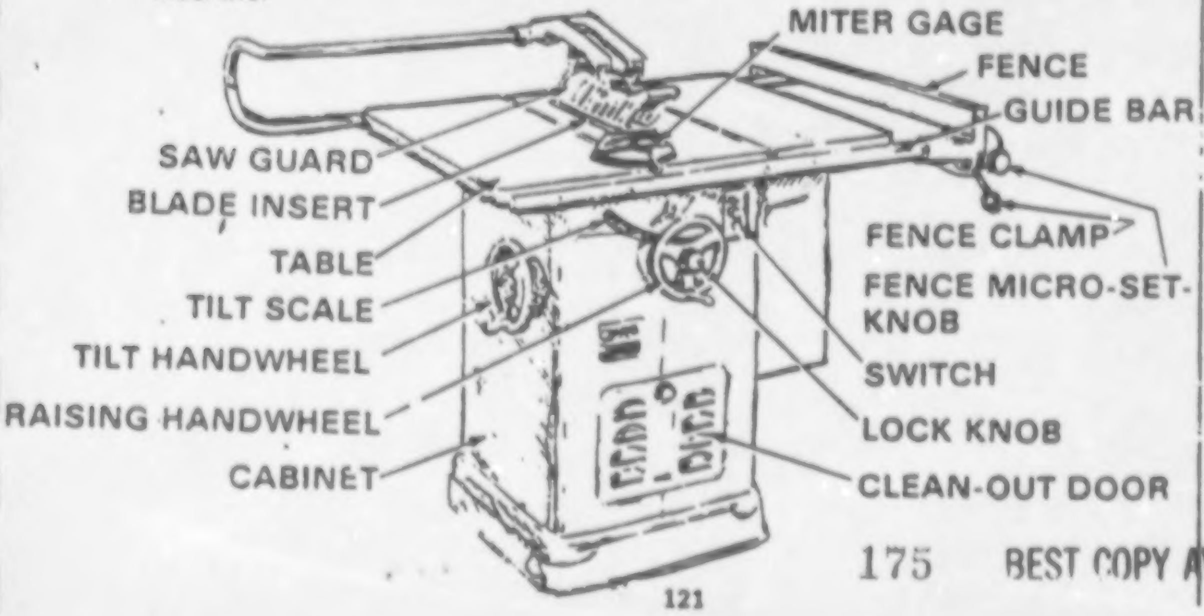
1.	A rag should be used to hold hot objects while buffing.	T	F
2.	Always buff on the lower half of the wheel.	T	F
3.	Loose clothing or hair must be confined.	T	F
4.	Eye protection must be worn when buffing.	T	F
5.	Use extra caution when buffing corners or confined areas of the work.	T	F



(Print the correct names)

For Safety —

1. Operate only with instructor's permission and after you have received instruction.
2. Remove jewelry, eliminata loose clothing, and confine long hair.
3. Make sure all guards are in place and operating correctly.
4. Always use proper eye protection.
5. Make all adjustments and remove chips or dust with the power off.
6. Never use the miter gage and fence together in the same operation.
7. The saw blade should extend above the work piece untill the gullets of the blade clear the material.
8. Never saw free hand. Use the miter gage when cross cutting, the fence when ripping.
9. Never reach over the saw blade.
10. Use extra care and precaution when sawing large material, or when using a dado or molding cutter head.
11. Use a push stick when ripping narrow stock or when hands would be close to blade.
12. Do not stand in line of the cut when operating the saw.
13. Lower the blade and be sure it has come to a full stop before leaving the machine.



Circular Saw

S

Name

Class

Date Grade

Safety Quiz

(Circle True or False)

1. It is safe to saw freehand. T F

2. The fence should always be used. T F

3. The guard is not always necessary. T F

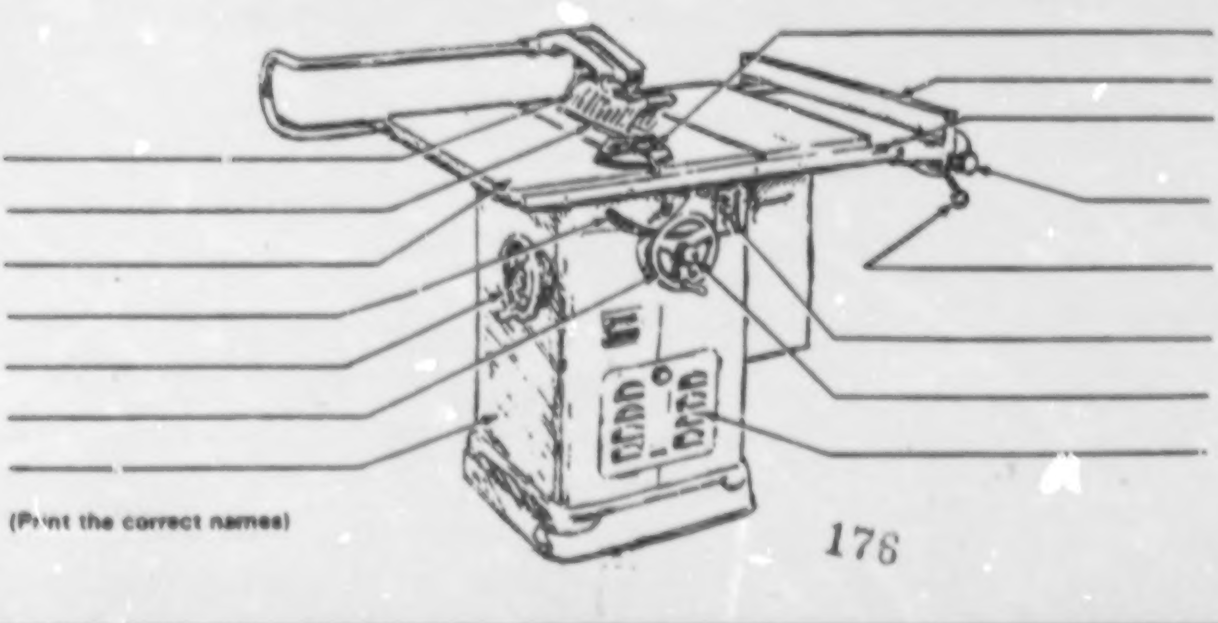
4. When ripping it is best to stand directly behind the blade. T F

5. Eye protection should be worn when using a table saw. T F

6. The saw blade should be adjusted so that the teeth clear the thickness of material to the depth of the gullets. T F

7. A helper or roller should be used when ripping long pieces. T F

8. A push stick is necessary when ripping narrow stock. T F

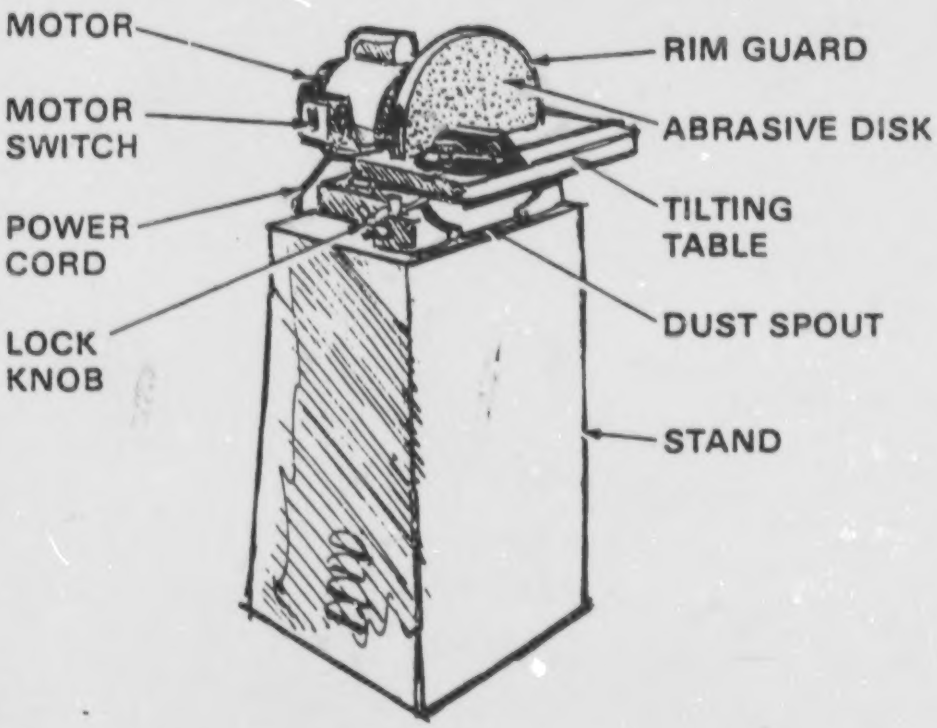


(Print the correct names)

Disc Finishing Machine

For Safety —

1. **Operate only with instructor's permission and after you have received instruction.**
2. **Remove jewelry, eliminate loose clothing, and confine long hair.**
3. **Make sure all guards are in place and operating correctly.**
4. **Always use proper eye protection.**
5. Make sure adhesive is holding abrasive disc tightly to the revolving platen.
6. Abrasive disc should not be torn or damaged.
7. Material should be held flat against the table and hands kept clear of the abrasive disc.
8. The table should be adjusted to within 1/16" of the disc.
9. Work must be done on the side of the disc rotating downward.
10. Do not leave this machine until it has coasted to a full stop or been stopped with a piece of scrap wood.



Disc Finishing Machine

s

Name ______________________

Class ______________________

Date ______________ Grade ________

Safety Quiz

(Circle True or False)

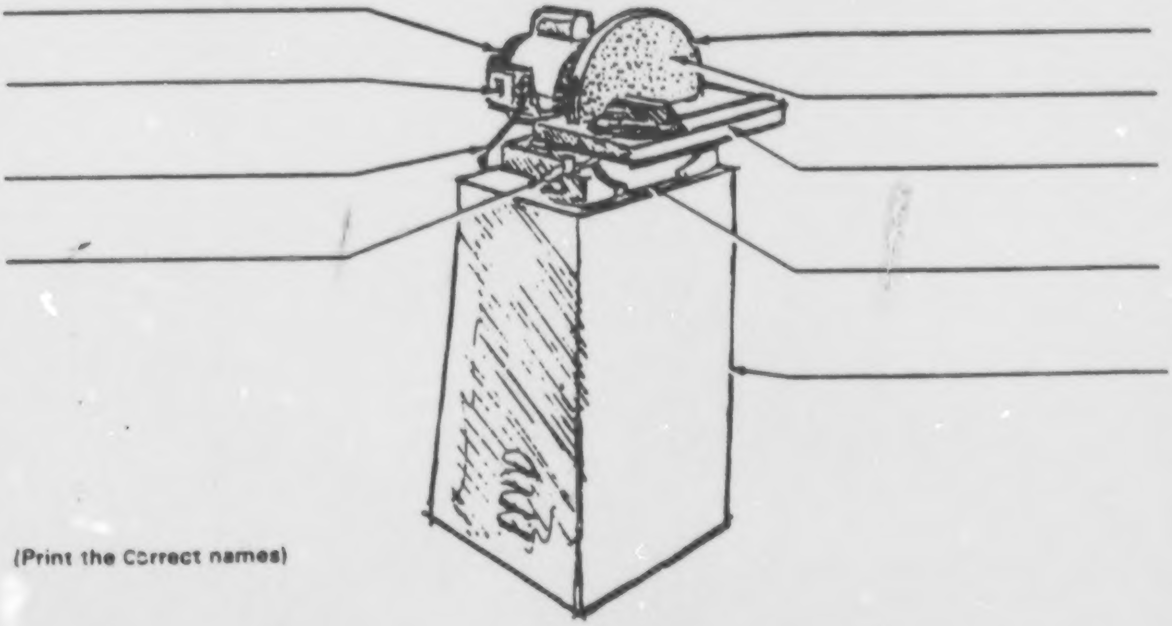
1. Sanding can be safely done on either the left or right side of the rotating disc. T F

2. The Rim Guard is of no real value and can be removed for most operations. T F

3. The table should be adjusted to within 1/16" of the disc. T F

4. A piece of scrap lumber can be used to slow down and stop the disc after turning off the power. T F

5. The table may be tilted safely while the machine is running. T F

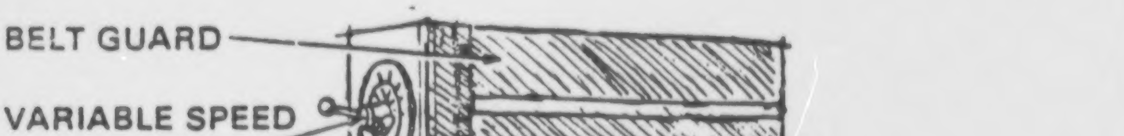


(Print the Correct names)

Drill Press

For Safety —

1. **Operate only with instructor's permission and after you have received instruction.**
2. **Remove jewelry, eliminate loose clothing, and confine long hair.**
3. **Make sure all guards are in place and operating correctly.**
4. **Always use proper eye protection.**
5. Hold material securely with vise or clamps.
6. Be sure key is removed from chuck.
7. Select a properly sharpened bit. For metal, center punch when hole is to be drilled.
8. Turn off power if work piece is caught in the drill. Do not stop by hand.
9. Adjust table or depth stop to avoid drilling into the table.
10. Select the correct speed, normally slower for metal-faster for wood. The larger the bit, the slower the speed.



Name ______________________________

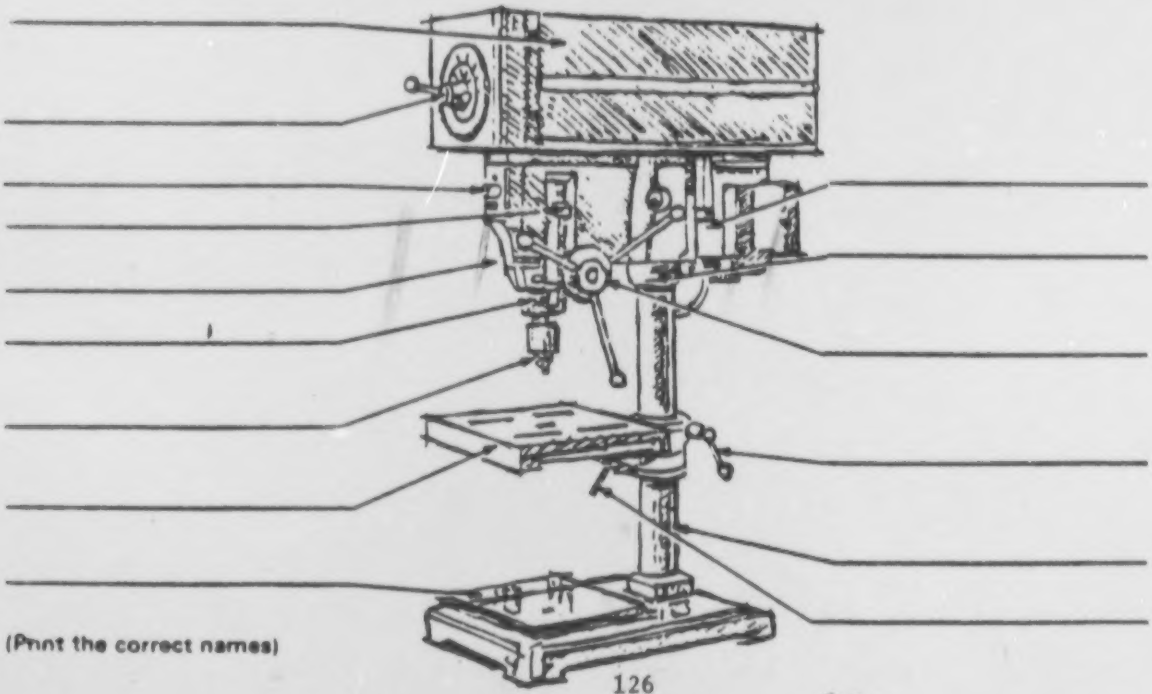
Class ______________________________

Date ________________ Grade __________

Safety Quiz

(Circle True or False)

1. It is necessary to select the proper speed. T F
2. The chuck key should be kept in the chuck at all times. T F
3. Work should always be secured. T F
4. Rings may be worn while operating a drill press. T F
5. A chip brush should be used for removing chips. T F
6. The drill should be operated at top speed for all work. T F
7. The long end of the work should be to the left of the operator. T F



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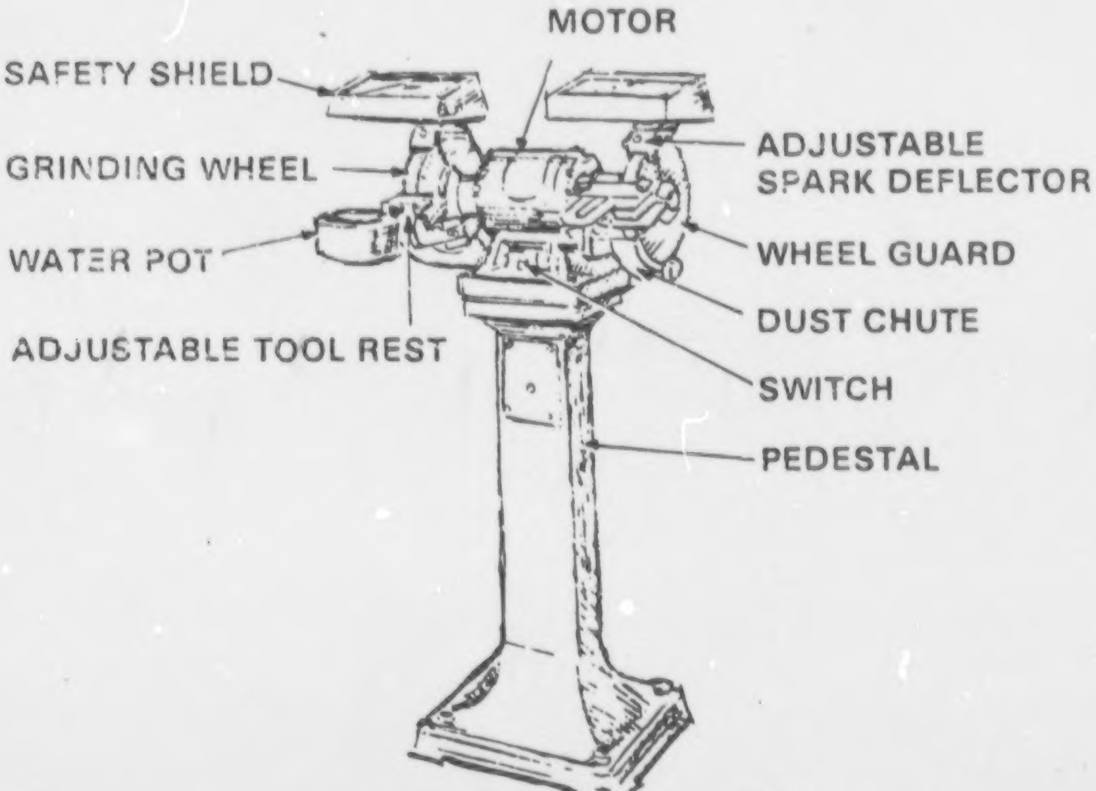
BEST COPY AVAILABLE

For Safety —

1. Operate only with instructor's permission and after you have received instruction.
2. Remove jewelry, eliminate loose clothing, and confine long hair.
3. Make sure all guards are in place and operating correctly.
4. Always use proper eye protection.
5. The tool rests must be adjusted to within 1/16" of the grinding wheel.
6. Spark deflectors must be adjusted to within 1/16" of the grinding wheels.
7. Do not grind on the side of the grinding wheels.
8. Stand to one side when starting the machine.
9. Discard or report grinding wheels that are excessively small or cracked.
10. Small work pieces should be held with the "vise grip" type of pliers.
11. Do not leave the machine until the grinding wheels have come to a full stop.



S ______________________________ **Grinder**

Name ______________________

Class ______________________

Date ______________ Grade __________

Safety Quiz

(Circle True or False

1. The tool rest should be adjusted to within 1/2" of wheel. T F

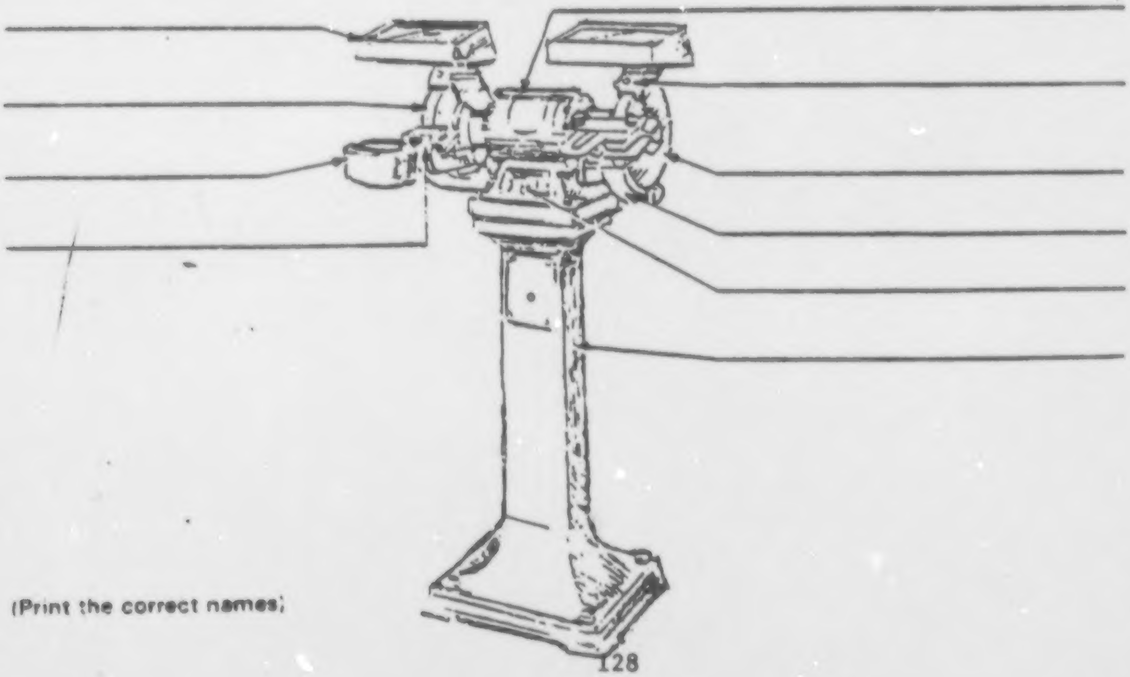
2. Eye protection is always necessary while grinding. T F

3. Once the "off" switch is in the off position, the operator may leave. T F

4. Wheels that are slightly cracked may be used. T F

5. The spark arrestor is not necessary if there is a safety shield. T F

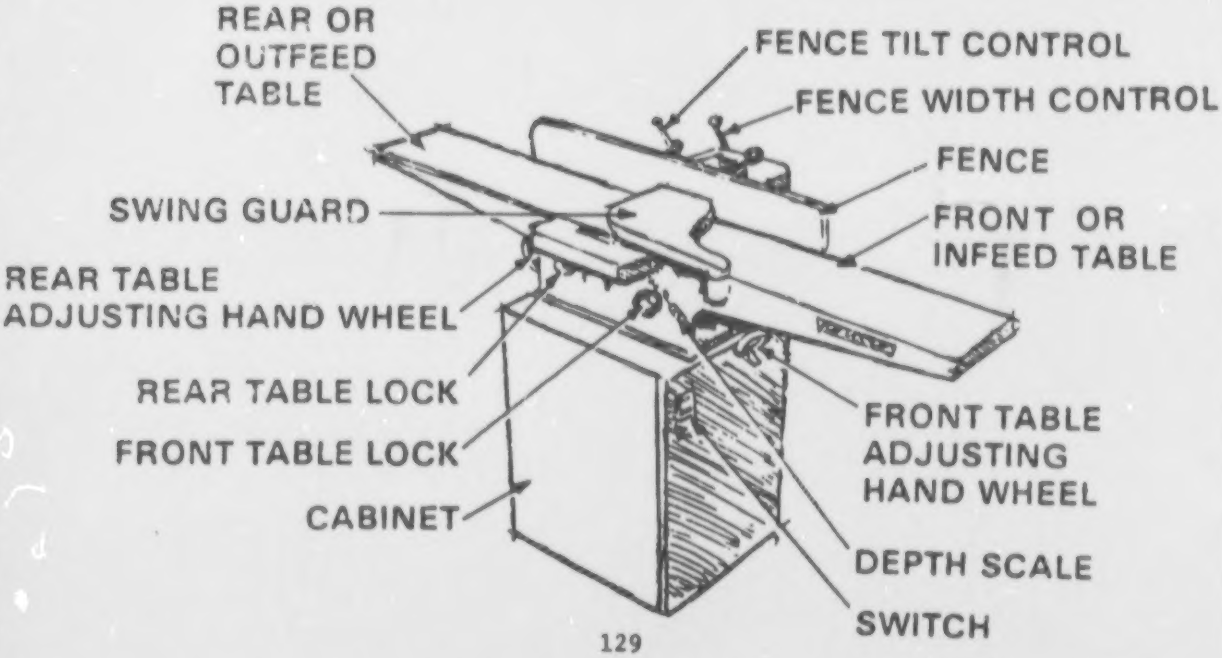
6. When grinding a small piece of steel, "vise grips" are advised. T F



(Print the correct names)

For Safety —

1. Operate only with instructor's permission and after you have received instruction.
2. Remove jewelry, eliminate loose clothing, and confine long hair.
3. Make sure all guards are in place and operating correctly.
4. Always use proper eye protection.
5. Make all adjustments with the power turned off.
6. A push stick or push block must be used when hands would pass over-or within 2" of the cutter head.
7. Make several light cuts (1/16" to 1/8") instead of one heavy cut (1/2").
8. The absolute minimal length of material that may be jointed is twice the size of the knives - 6" jointer, 12" - 8" jointer, 16".
9. Do not adjust or move the rear or out feed table without permission.



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S **Jointer**

Name __________________________________

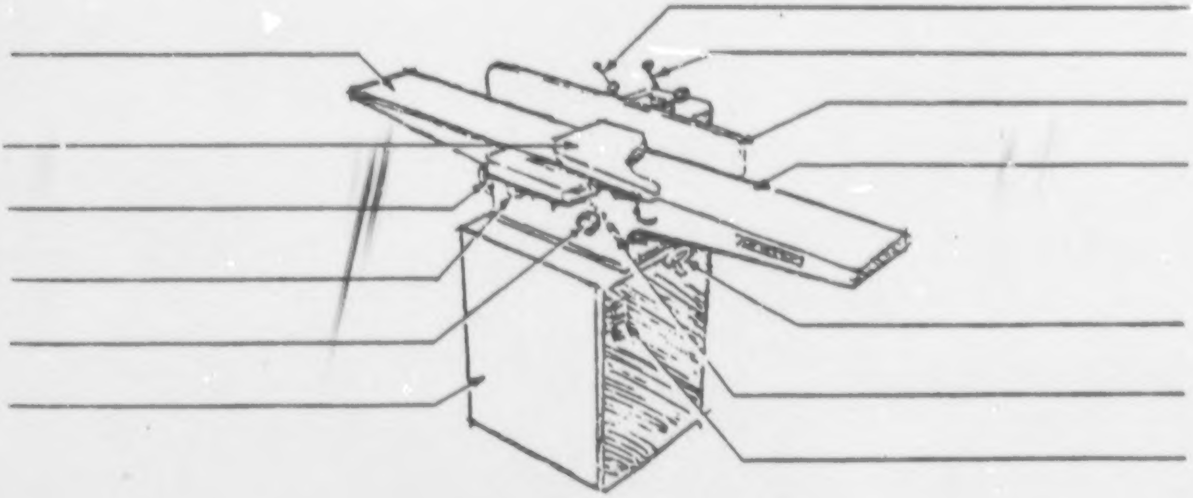
Class __________________________________

Date __________________ Grade __________

Safety Quiz

(Circle True or False)

1. It is possible for the guard to stick and not cover the cutter. T F
2. A push stick should be used when the hands could get close to the cutter. T F
3. Eye protection is not necessary when operating a jointer. T F
4. Permission should be obtained before using the jointer. T F
5. Stock shorter than 6" may be processed on the jointer. T F
6. In order to remove 3/8" you should make three passes 1/8" deep. T F



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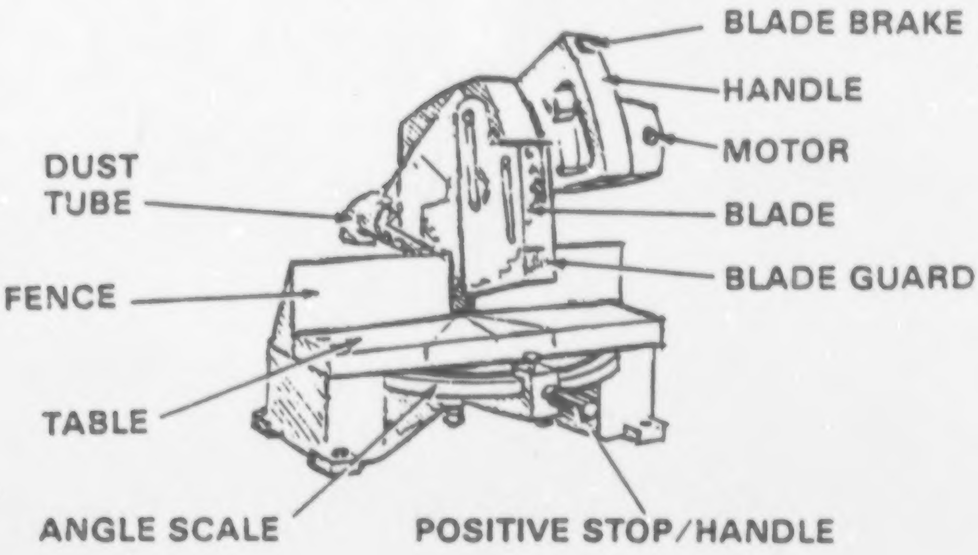
For Safety —

1. Operate only with instructor's permission and after you have received instruction.
2. Remove jewelry, eliminate loose clothing, and confine long hair.
3. Make sure all guards are in place and operating correctly.
4. Always use proper eye protection.
5. Be sure power is disconnected before making angle adjustments or changing blades.
6. Always hold the work firmly against the fence and table.
7. Install a new table if adequate support has been cut away.
8. Allow the motor to reach full speed before starting to cut.
9. Use the brake to stop the blade before removing scrap or chips from the work area.
10. Be sure guard parts are functioning properly.



S

Motorized Miter Box

Name ______________________________

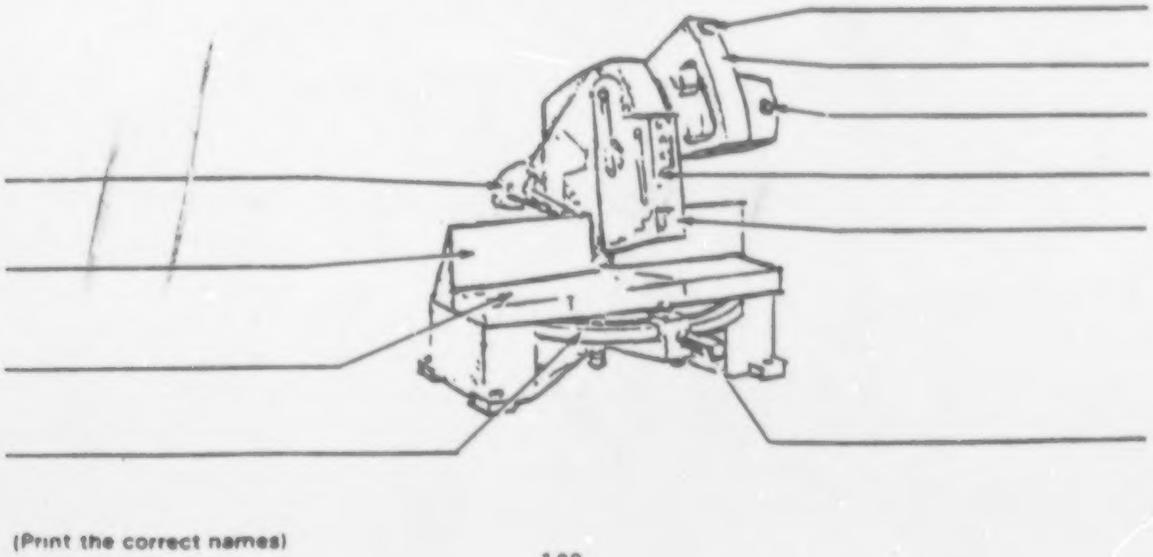
Class ______________________________

Date ________________ Grade __________

Safety Quiz

(Circle True or False)

1. The table on this machine can be cut so often that it no longer gives safe support to the work. T F
2. The machine should be stopped by pushing a piece of scrap against the side of the blade. T F
3. The guard sections can easily be checked for proper operation before starting to use the machine. T F
4. The trigger switch and the brake button can be used together to gain better control. T F
5. A warped or twisted work piece is not really dangerous. T F



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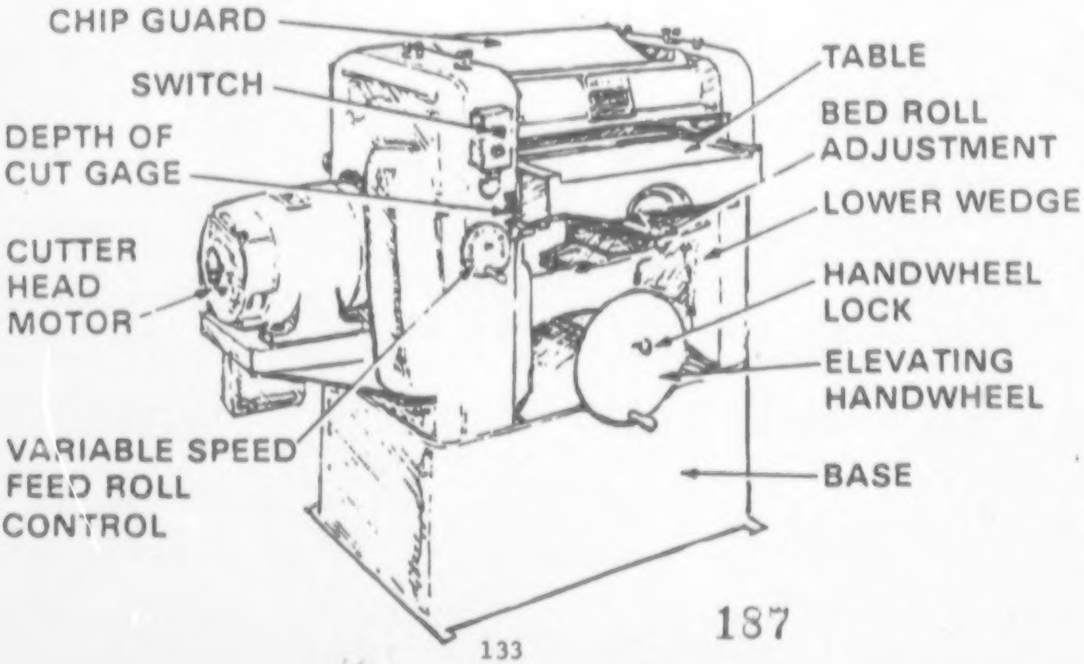
For Safety —

1. Operate only with instructors permission and after you have received instruction.
2. Remove jewelry, eliminate loose clothing, and confine long hair.
3. Make sure all guards are in place and operating correctly.
4. Always use proper eye protection.
5. Be sure to check all material for loose knots, nails and other foreign objects.
6. Do not force stock through the planer. Keep hands off the material and let the power feed operate.
7. Select the proper depth of cut and the rate of speed depending on the stock being planed.
8. Thin stock should be properly supported by a jig or back up board. Check with the instructor for minimal thickness and length.
9. Never look directly into the throat of a planer at table level while it is running or in operation.
10. Remove shavings or chips when the power is turned off. Keep hands away from chip guard and the point of operation.
11. Do not stand directly in front of the machine in line of possible kick back.



S

Planer-Surfacer

Name ______________________________

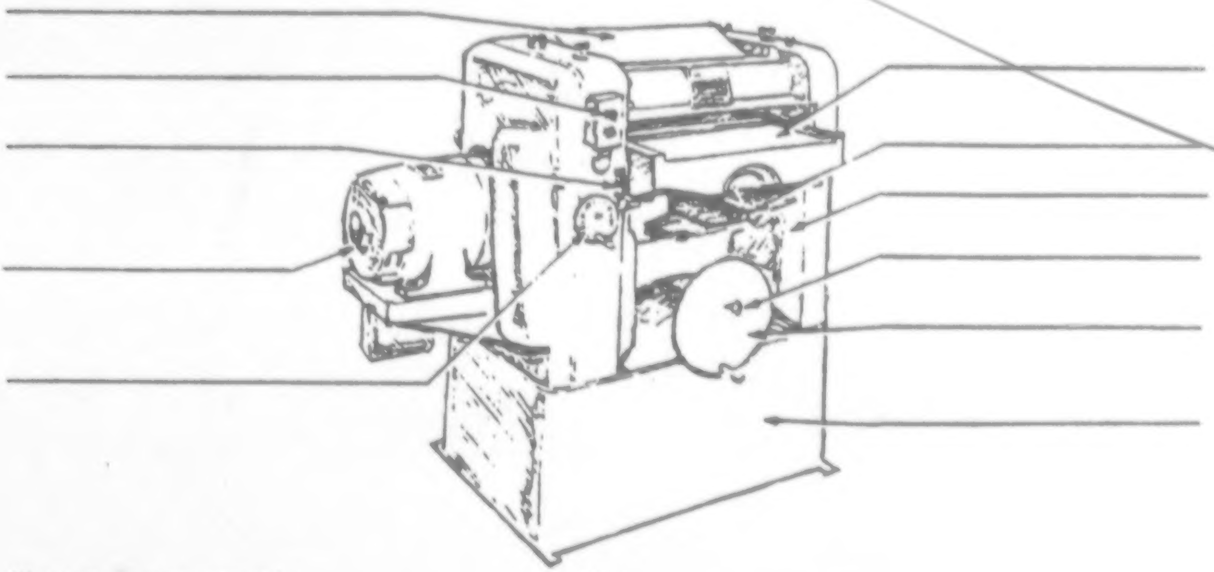
Class ______________________________

Date ________________ Grade __________

Safety Quiz

(Circle True or False)

1. There is no real minimum regarding thickness or length of stock which can be planed safely. T F
2. Stock should be pulled through the planer by hand. T F
3. You should never look into the throat area at table level. T F
4. The power should be turned off while removing chips or shavings. T F
5. A jig or other support is often needed for thin stock. T F
6. The proper depth of cut and rate of speed is related to the material being planed. T F



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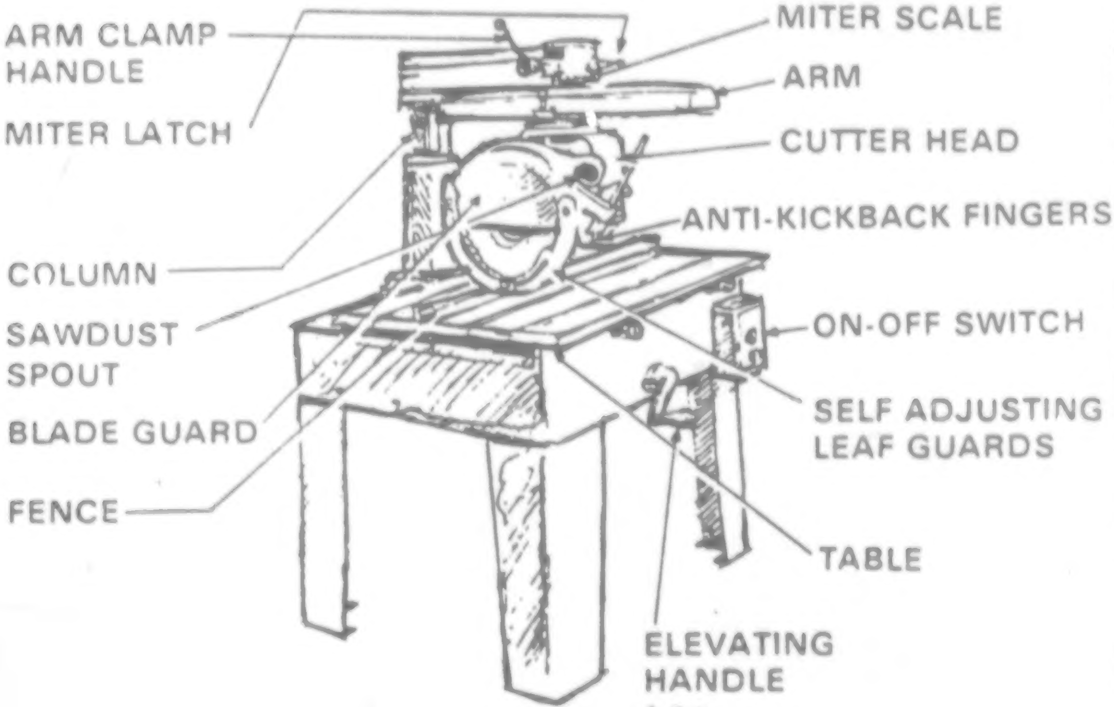
For Safety —

1. Operate only with instructor's permission and after you have received instruction.
2. Remove jewelry, eliminate loose clothing, and confine long hair.
3. Make sure all guards are in place and operating correctly.
4. Always use proper eye protection.
5. Make all adjustments with the power off.
6. Be sure the leaf guards are operating properly and the blade will not extend beyond the table edge.
7. When cross cutting hold the material securely against the fence.
8. Always pull the blade through the work and return the cutter head behind the fence before removing material or starting the next cut.
9. Make sure the blade guard and kickback fingers are properly adjusted before ripping.
10. Always rip into the blade, never in the same direction as the rotation.
11. Make sure the blade has stopped before leaving the machine.



S

Radial Arm Saw

Name ______________________

Class ______________________

Date ______________ Grade __________

Safety Quiz

(Circle True or False

1. Eye protection is not necessary except when ripping. T F

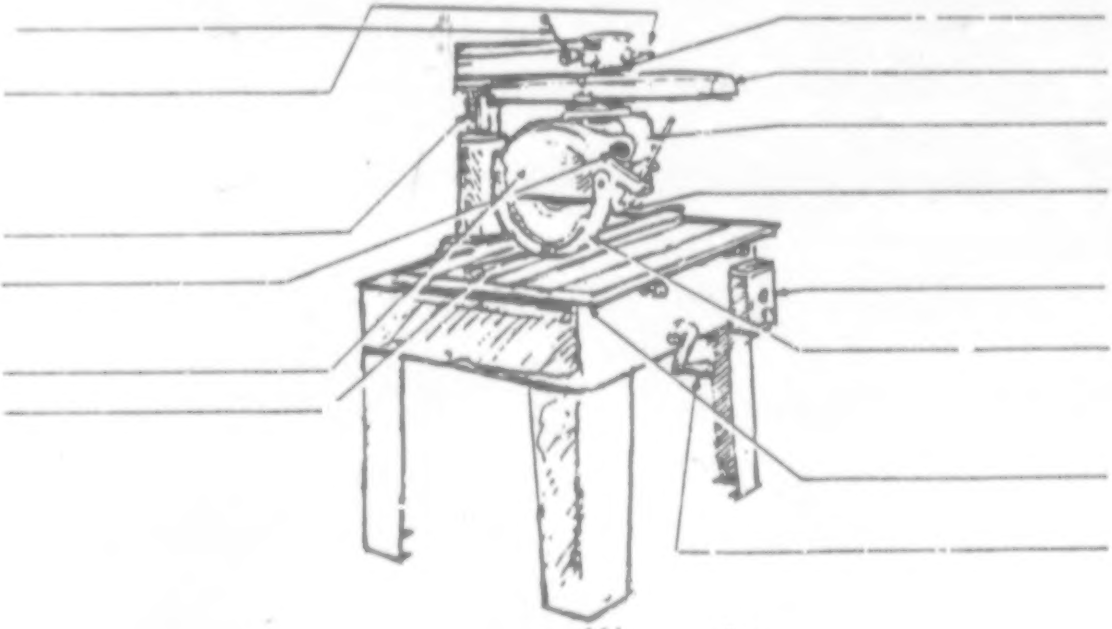
2. The guard and kickback fingers must be in place when ripping. T F

3. The saw blade may safely extend beyond the table. T F

4. The blade should be installed so that in cross cut position the teeth at the bottom of the blade point away from the operator. T F

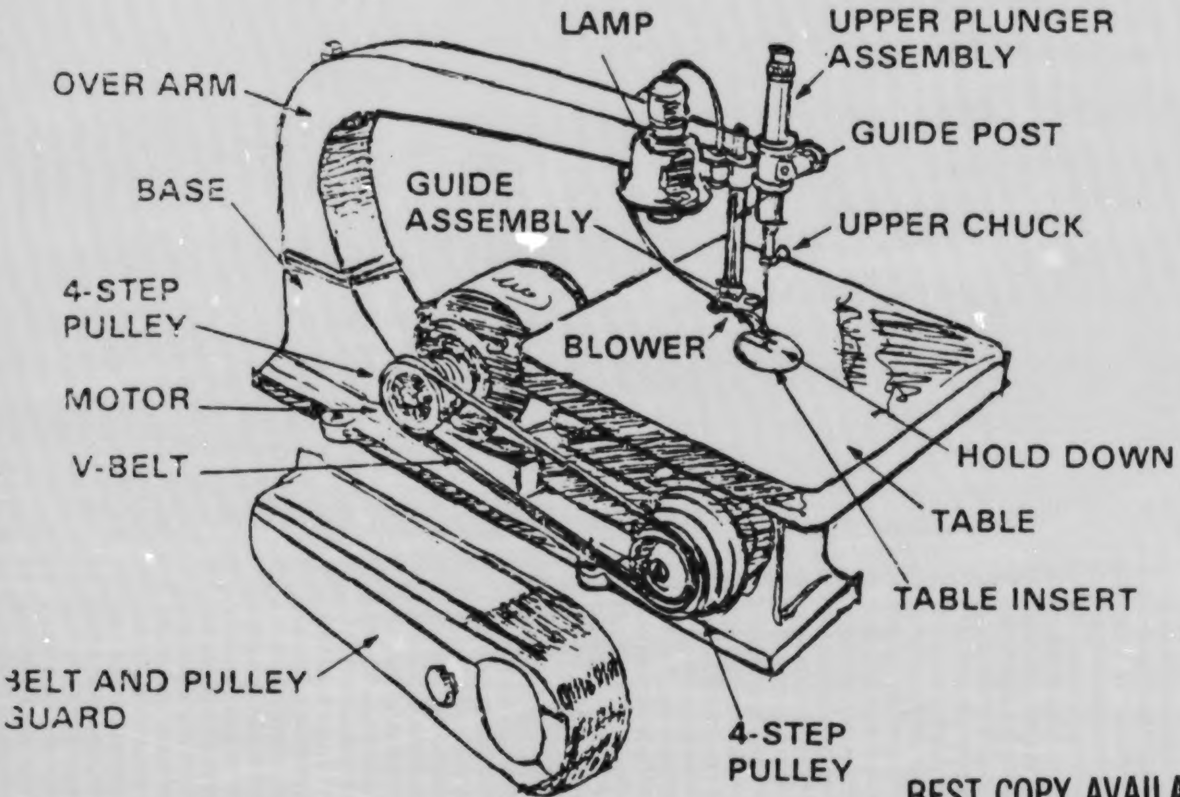
5. When ripping, one hand must hold the material and the other hand operate the saw. T F

6. In cross cutting, the saw should be returned to the rear of the arm upon the completion of each cut. T F



For Safety —

1. Operate only with instructor's permission and after you have received instruction.
2. Remove jewelry, eliminate loose clothing, and confine long hair.
3. Make sure all guards are in place and operating correctly.
4. Always use proper eye protection.
5. Make all adjustments with the power off, then rotate the motor by hand as a final check.
6. Be sure hold down is pressing lightly on the work piece.
7. The blade should be held firmly in the chucks, be square with the table, and be properly supported by the guide assembly.
8. Guide the material slowly through the machine with both hands, keeping fingers away from the cut line.
9. Choose the correct blade and correct speed for the material to be cut, and for the smallest radius required.



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Scroll Saw

S

Name ______________________________

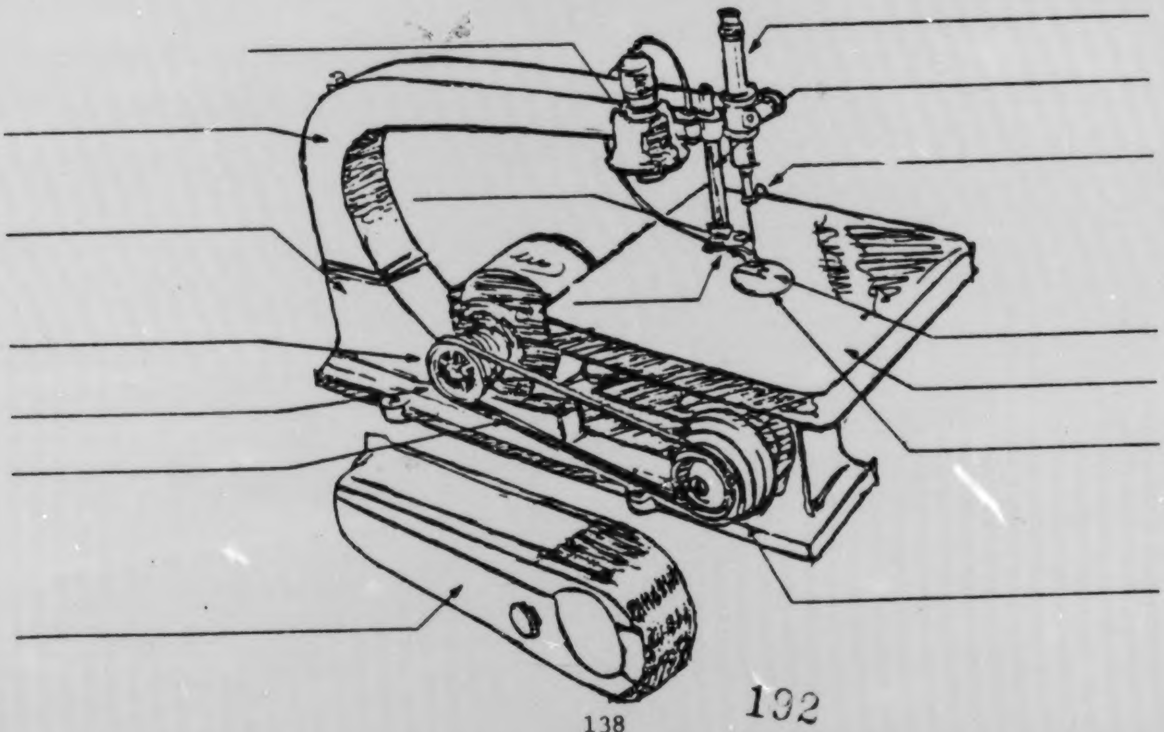
Class ______________________________

Date ________________ Grade ________

Safety Quiz

(Circle True or False)

1. If the blade pinches in the kerf you should just push harder. T F
2. It is necessary to have the flat side of the stock tight against the table. T F
3. Fingers should be kept away from the cutting line. T F
4. The hold down should be 1/16" from the work piece. T F
5. After changing blades or making guide adjustments the machine should be rotated one full stroke by hand. T F



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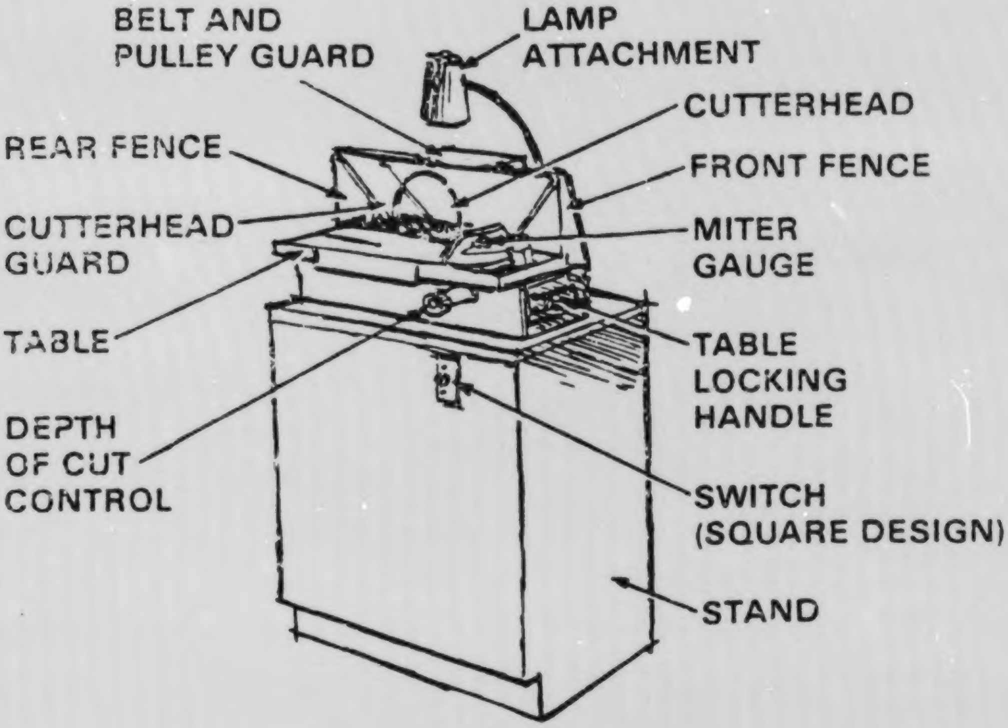
For Safety —

1. Operate only with instructor's permission and after you have received instruction.
2. Remove jewelry, eliminate loose clothing, and confine long hair.
3. Make sure all guards are in place and operating correctly.
4. Always use proper eye protection.
5. Be sure switch is in off position before adjusting depth of cut, table tilt, or checking cutters.
6. The guard must be clean and slide freely before beginning the operation. Do not clamp in the up position.
7. Always use push stick or a push block when planing small material.
8. Continue moving the work piece past the cutterhead until it is resting against the rear fence.
9. Do not brush chips or dust away from the point of operation until the machine has come to a full stop.



S **Uniplane**

Name ____________________

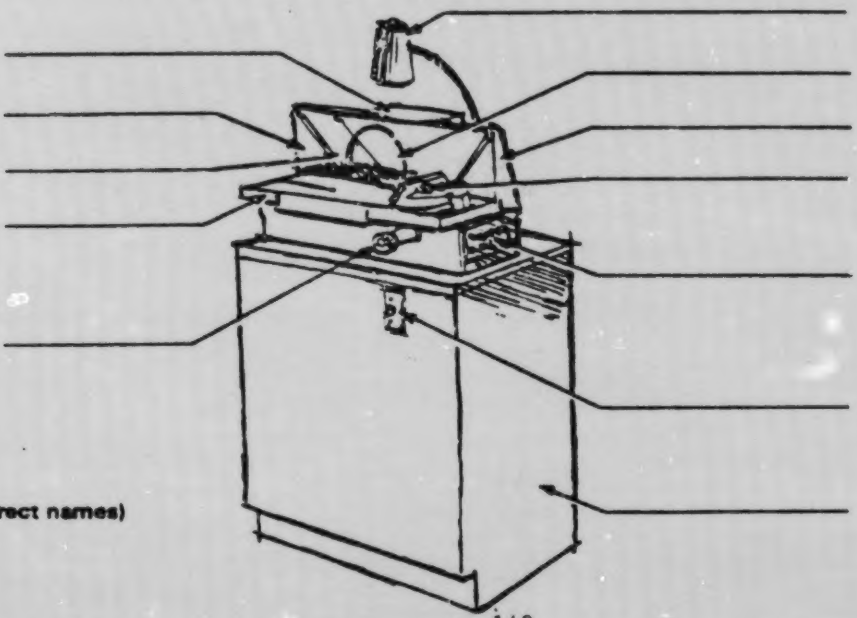
Class ____________________

Date ______________ Grade ________

Safety Quiz

(Circle True or False)

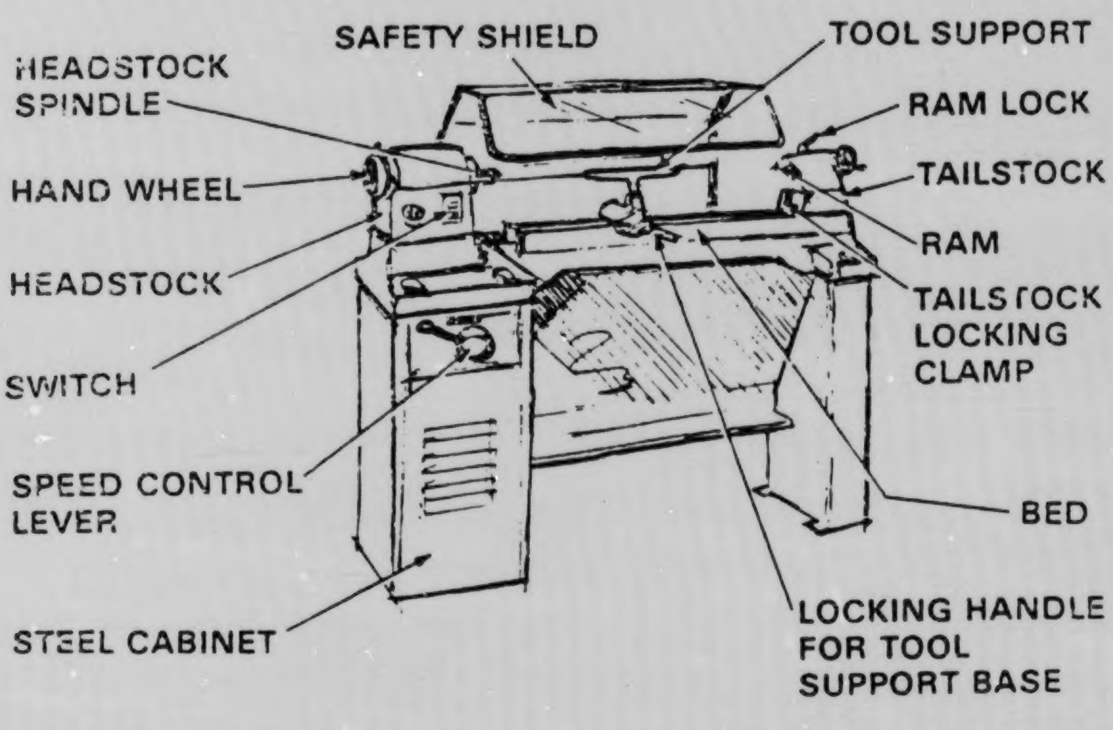
1. The guard should be clamped in position to clear the work piece. T F
2. Loose cutters will give a rough cut but are not detrimental to safety. T F
3. The work piece should be moved through the machine to the rear fence before removing. T F
4. The machine must come to a full stop before it is safe to leave the work area. T F
5. All adjustments should be made with the power off. T F
6. A lamp attachment contributes to safety. T F



(Print the correct names)

For Safety —

1. Operate only with instructor's permission and after you have received instruction.
2. Remove jewelry, eliminate loose clothing, and confine long hair.
3. Make sure all guards are in place and operating correctly.
4. Always use proper eye protection.
5. Work must be balanced and securely held between centers or mounted on a face plate
6. Rotate spindle by hand to check clearance before starting the lathe.
7. Make sure safety shield is lowered.
8. Tool rest must be 1/8" from the work piece and adjusted to the proper height for the tool being used.
9. Be sure the lathe is running at the proper speed for the operation.
10. Remove the tool rest and base or support before sanding or polishing.
11. Make sure lathe cutting tools are sharp, and use the correct tool for the operation.



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S

Name ______________________

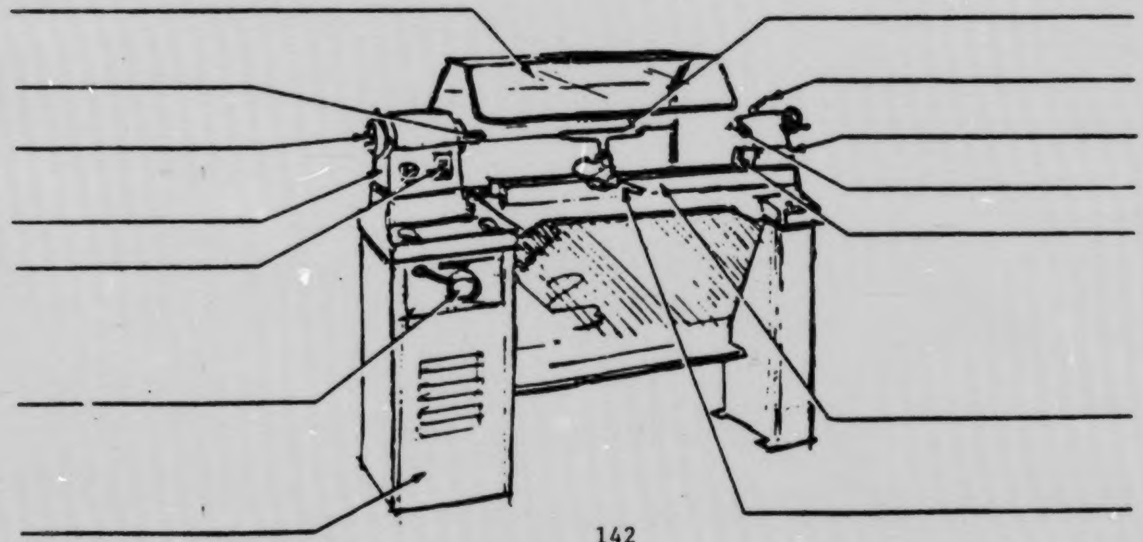
Class ______________________

Date ______________ Grade ________

Safety Quiz

(Circle True or False)

1. The speed of the machine is not important for safe operation. T F
2. A space of 1" is safe between the tool rest and the work. T F
3. Eye protection is not necessary during operation. T F
4. Dull tools may be used for a roughing operation. T F
5. The tool rest should be removed while sanding. T F
6. It is safe to turn work that is not balanced. T F
7. Long sleeves may be worn while operating the lathe. T F
8. The cutting tools should be held loosely. T F



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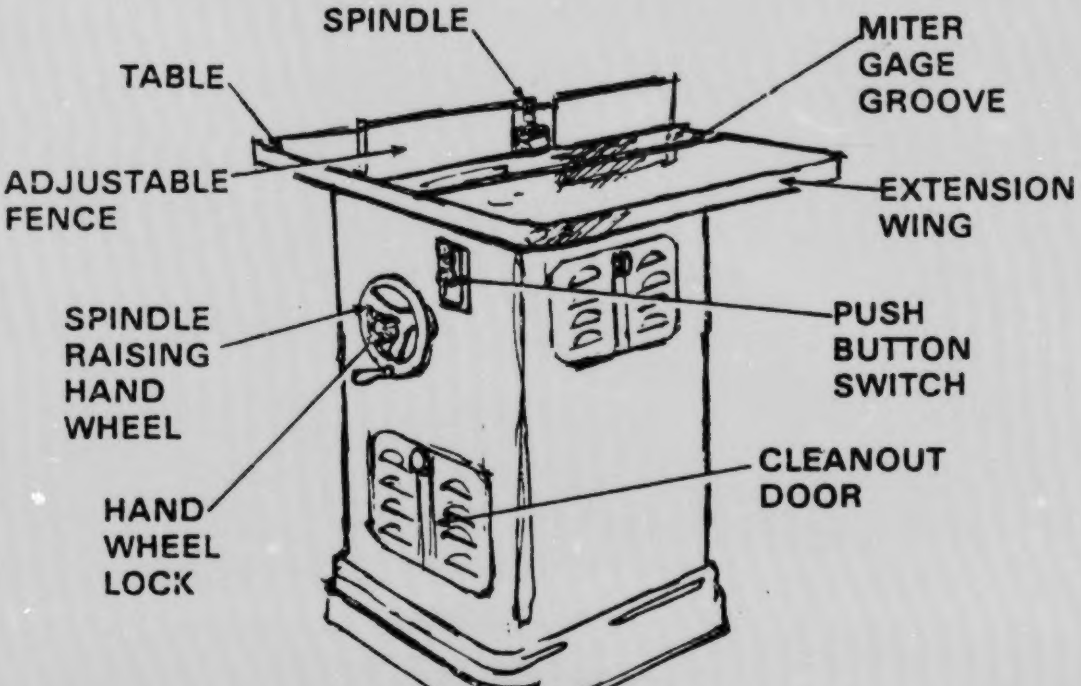
BEST COPY AVAILABLE

For Safety —

1. **Operate only with instructors permission and after you have received instruction.**
2. **Remove jewelry, eliminate loose clothing, and confine long hair.**
3. **Make sure all guards are in place and operating correctly.**
4. **Always use proper eye protection.**
5. All adjustments for cutter heighth and fence position should be made with the power off.
6. Guards and hold downs should be checked for proper operation.
7. Choose the correct cutter and collars for the operation.
8. Expose only the amount of cutter necessary to do the job. Use additional fixtures if necessary.
9. Always use a starting pin for free hand shaping .
10. Use the smallest table insert possible.

1. Use three wing-one piece cutters whenever possible.

12. Brush away dust and chips only when the machine is stopped.



Name ______________________________

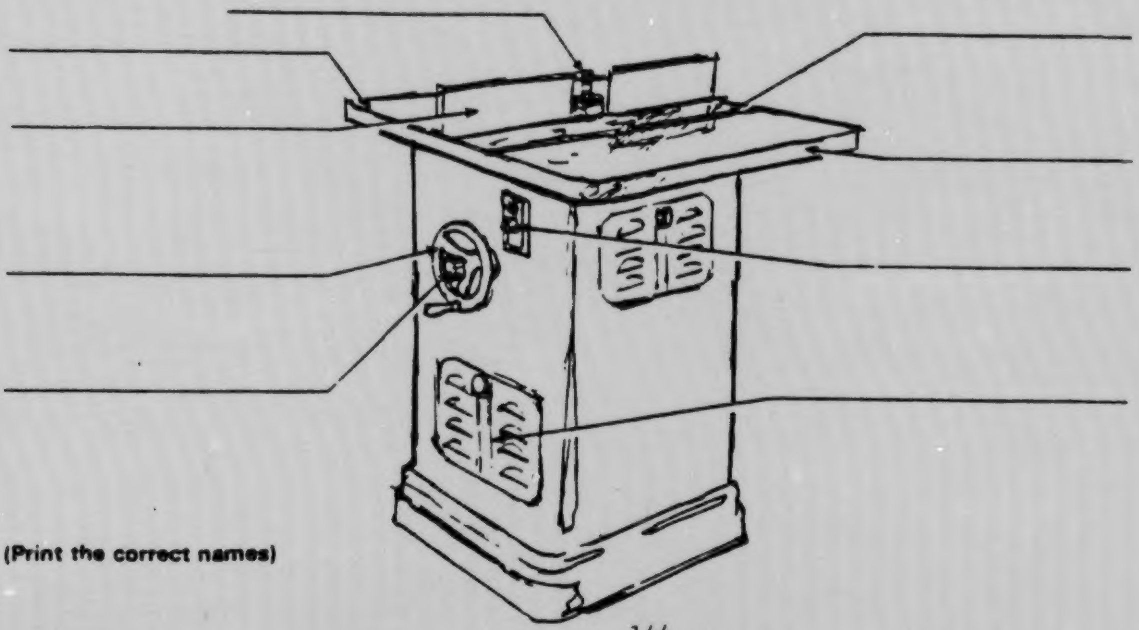
Class ______________________________

Date ____________________ Grade _________

Safety Quiz

(Circle True or False)

1. In most cases guards and hold downs only get in the way. T F
2. Often special or custom fixtures must be made to do a job safely. T F
3. A starting pin is not necessary. T F
4. The largest table insert should always be used. T F
5. A brush should be used to brush away chips when the machine is running. T F
6. Three wing cutters are safer than a cutter head. T F



(Print the correct names)

SAFETY RULES FOR PORTABLE ELECTRIC HAND TOOLS

1. The instructor's permission must be obtained before using portable electric tools.
2. Be sure that the switch is in the "off" position before you plug in the electric cord.
3. Wear eye protection when operating all portable electric tools.
4. Be sure that the switch on each equipment handle is the constant pressure (dead-man) type. That is, when pressure is released, power is shut off.
5. Be sure that equipment is properly grounded; do not use in wet areas.
6. Do not wear loose or baggy clothing that could be caught in revolving parts.
7. Before starting, be sure that you have a good footing and that your work area is free of obstacles.
8. Inspect the electric cord for breaks or exposed wires before using.
9. Do not use excessive pressure while operating portable electric tools as this may damage the tools and cause accidents.
10. Properly secure all work before applying the tool.
11. Inspect guards before starting to see that they function properly.
12. When portable electric saws are used, take care to avoid cutting through the power supply and extension cords.
13. When portable electric saws are used, avoid "over-reaching" when completing a cut. Work should be positioned and secured in a manner that allows the tool operator to "walk through" the cut safely.
14. Be sure that stock is positioned and secured in a manner that allows cutting without binding of the saw blade of portable circular and bayonet-type saws.
15. Disconnect the cord plug from the power outlet before making any adjustments or replacing a blade or cutter.
16. If an extension cord must be used, make sure it is 12 gauge wire or heavier for lengths up to 100 feet, and 10 gauge or heavier for lengths up to 150 feet.

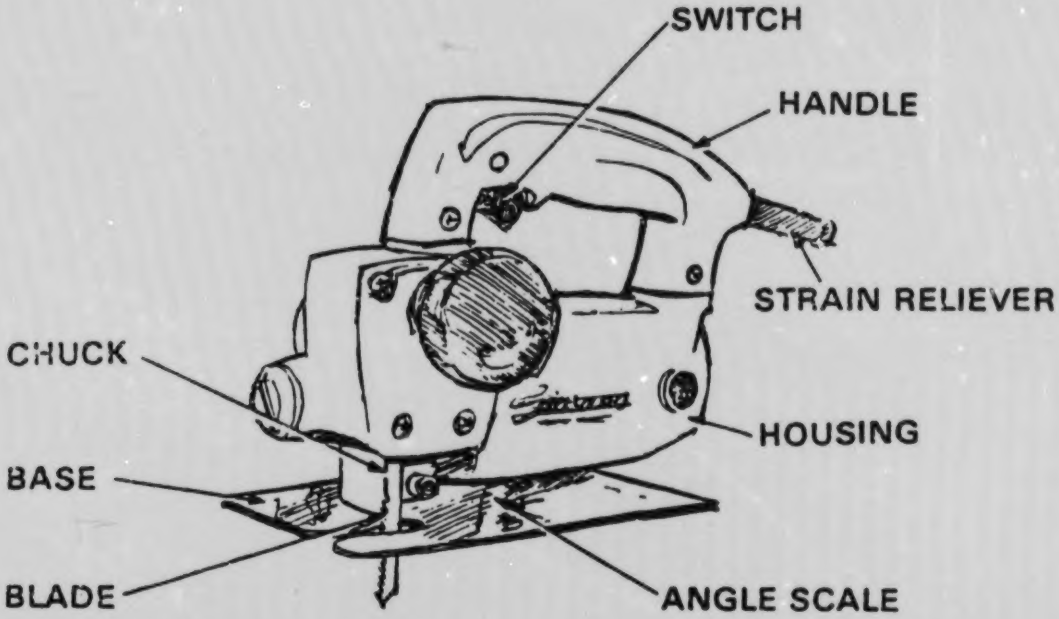
17. Never run a portable electric tool where there is danger of explosion or fire due to the presence of naptha, gasoline, benzene or other inflammable substance.

18. Keep your fingers away from blades or cutters.

Bayonet Saw

For Safety —

1. **Operate only with instructor's permission and after you have received instruction.**
2. **Remove jewelry, eliminate loose clothing, and confine long hair.**
3. **Make sure all guards are in place and operating correctly.**
4. **Always use proper eye protection.**
5. Make sure the blade is the correct type for the material and that it is tightly clamped in the chuck.
6. Be sure the switch is off before connecting to the power source.
7. Use vise or clamps to hold material to be cut securely.
8. Keep cutting pressure constant; do not force the blade into the work.
9. Always keep the base tightly against the material being cut.
10. Do not set the saw down on the bench until it has stopped.
11. If the blade is in the tool be sure and lay the tool on its side.



Bayonet Saw

Name ______________________________

Class ______________________________

Date ____________________ Grade __________

Safety Quiz

(Circle True or False)

1. Any blade will safely cut any kind of material. T F

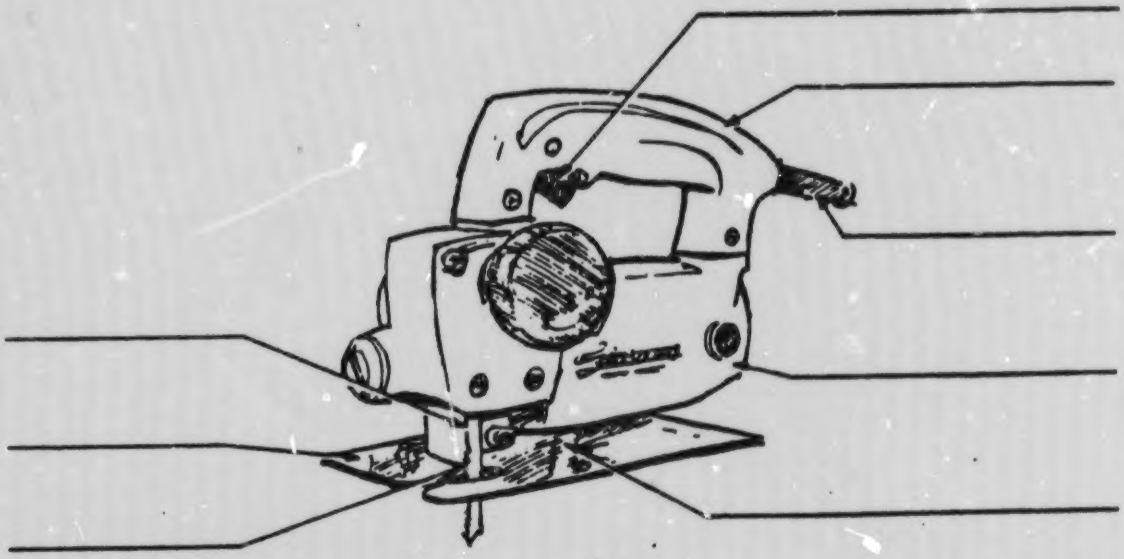
2. Material should be held securily before starting to cut. T F

3. Cutting pressure should be constant without forcing the blade into the work. T F

4. The base should always be flat against the work, even when the saw is tilted. T F

5. The saw can be stored using the blade and the rear of the base for support. T F

6. The housing and handle should be kept free of grease, chips, and dust. T F

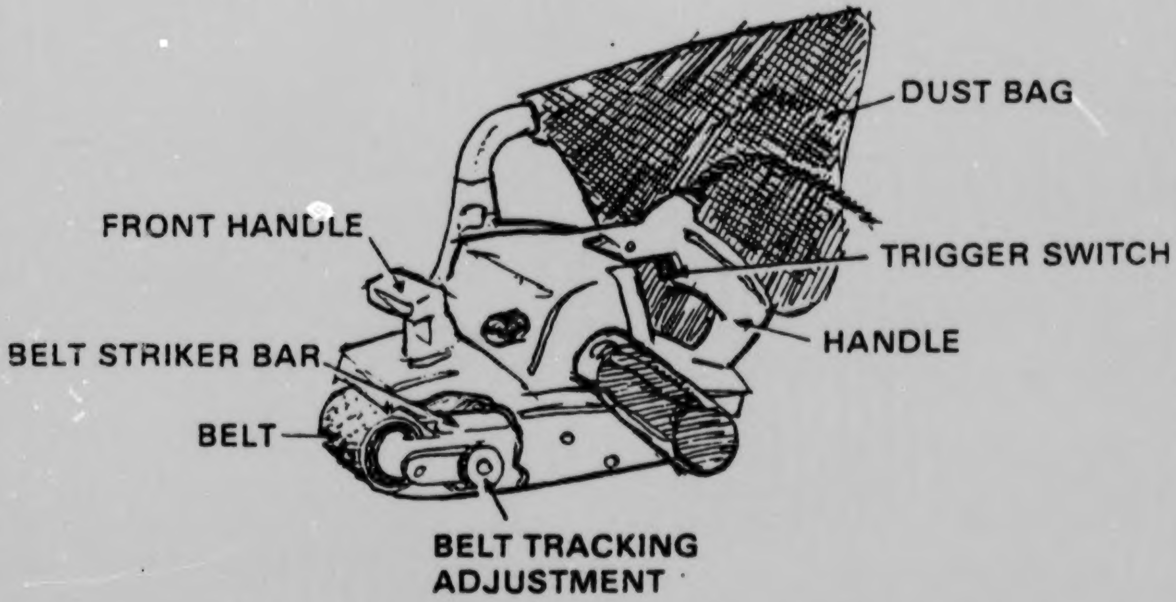


(Print the correct names)

Portable Belt Sander

For Safety —

1. Operate only with instructor's permission and after you have received instruction.
2. Remove jewelry, eliminate loose clothing, and confine long hair.
3. Make sure all guards are in place and operating correctly.
4. Always use proper eye protection.
5. Check to see if belt is in good condition, tracking properly, and is the correct grit size for the job.
6. Be sure switch is off before connecting to power source.
7. Start sander above work; let rear of belt touch first then level the tool. Do not tilt sideways.
8. Sand in direction of grain moving back and forth over a large area. Do not pause in one spot.
9. Keep electrical cord and dust bag away from working area.
10. Lift sander off the work and wait until it has stopped before placing on the bench.



Name ____________________

Class ____________________

Date ______________ Grade ________

Safety Quiz

(Circle True or

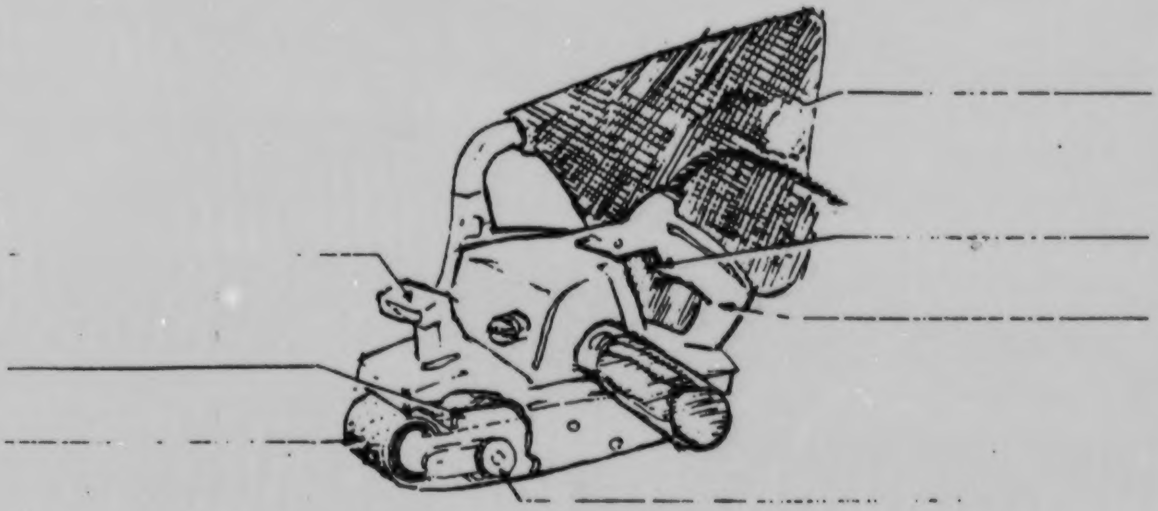
1. Proper belt is not a real factor in safe operation. T F

2. The sander should be resting flat on the work piece when starting. T F

3. If a firm grip is maintained on both handles it is not critical to remove jewelry. T F

4. There is a relation between selecting the correct belt for the job and safety. T F

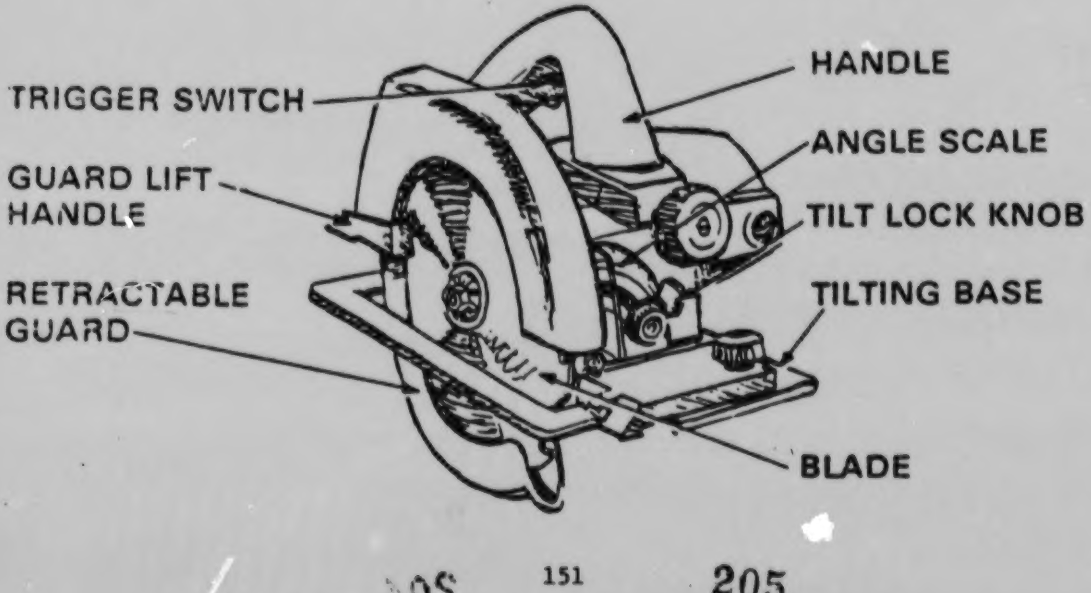
5. The tool should never be tilted or allowed to pause in one spot. T F



Portable Electric Circular Saw

For Safety —

1. Operate only with instructor's permission and after you have received instruction.
2. Remove jewelry, eliminate loose clothing, and confine long hair.
3. Make sure all guards are in place and operating correctly.
4. Always use proper eye protection.
5. Make sure that telescoping guard returns automatically to cover the blade after each cut.
6. Check the base setting for the proper depth of cut.
7. Make sure the power cord is clear of the blade.
8. Be sure the material you are cutting is adequately supported.
9. Do not start the cut until the saw has reached full speed.
10. Advance the saw slowly, straight through the work. Do not twist or turn the tool.
11. If the saw blade binds or smokes, stop cutting immediately.
12. The blade should be extended below the work until the blade gullets clear the material.
13. Do not set saw down until blade stops.



Portable Electric Circular Saw

Name ____________________

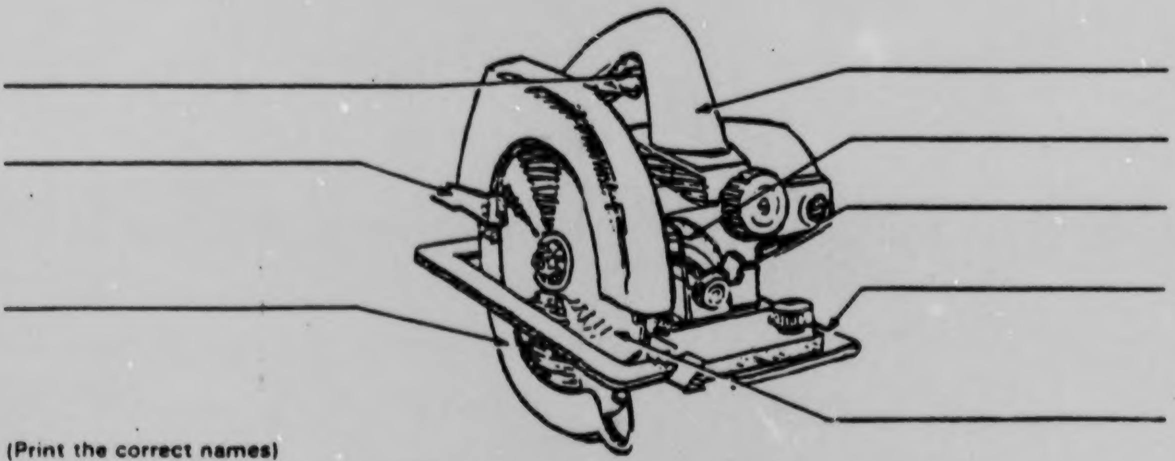
Class ____________________

Date ______________ Grade ________

Safety Quiz

(Circle True or False)

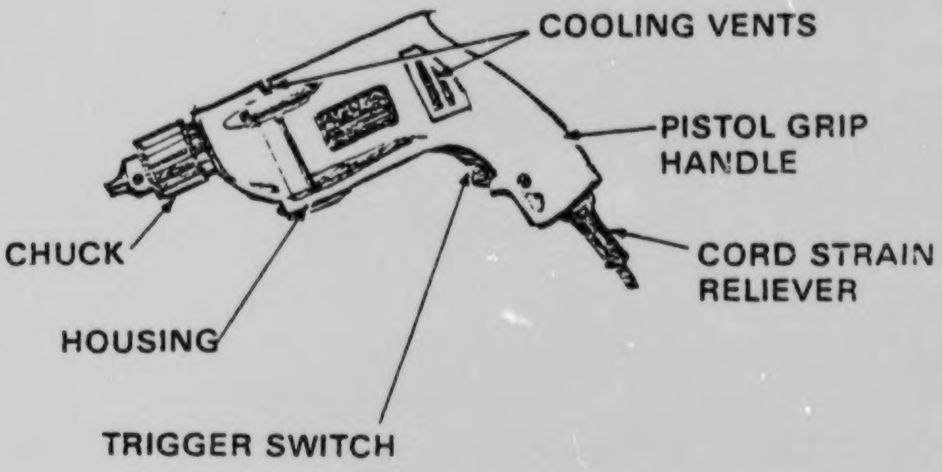
1. Permission should be obtained before operating this machine. T F
2. In certain cases the guard should be wedged so that it will not be operable. T F
3. Eye protection is not necessary when using this machine. T F
4. You should not set the saw down until it has completely stopped. T F
5. The saw blade should extend at least 1" beyond the thickness of the material being cut. T F
6. This saw can safely be used for cutting curves. T F



(Print the correct names)

For Safety —

1. Operate only with instructor's permission and after you have received instruction.
2. Remove jewelry, eliminate loose clothing, and confine long hair.
3. Make sure all guards are in place and operating correctly.
4. Always use proper eye protection.
5. "Unplug" the drill when changing bits
6. Make sure switch is off and key removed before connecting to power source
7. Mark hole location with center punch (metal) or AWL (wood) before drilling
8. Be sure work is tightly clamped or secure before drilling.
9. Drill with straight even steady pressure.



Portable Electric Drill

Name ______________________________

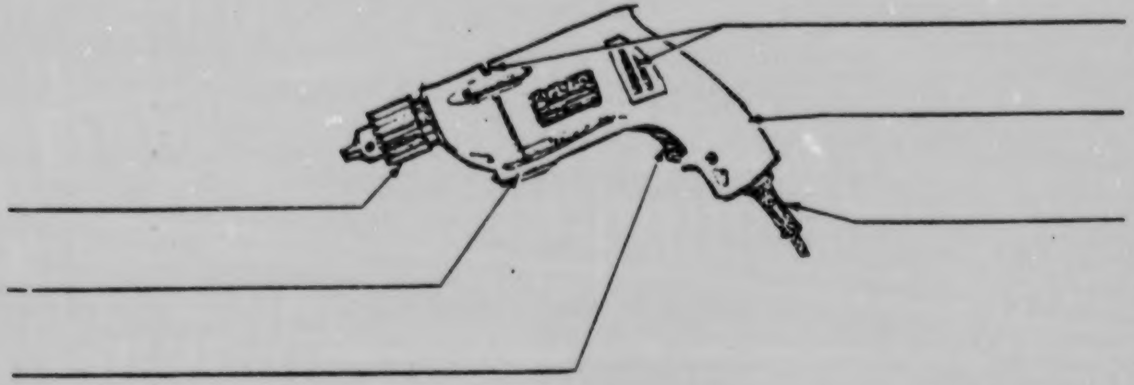
Class ______________________________

Date __________________ Grade ________

Safety Quiz

(Circle True or False)

1. Eye protection is not really necessary when drilling wood. T F
2. The drill should be unplugged when changing bits. T F
3. It is allright to carry the drill by the cord. T F
4. Even steady pressure should be used when drilling. T F
5. Work should be clamped while drilling. T F

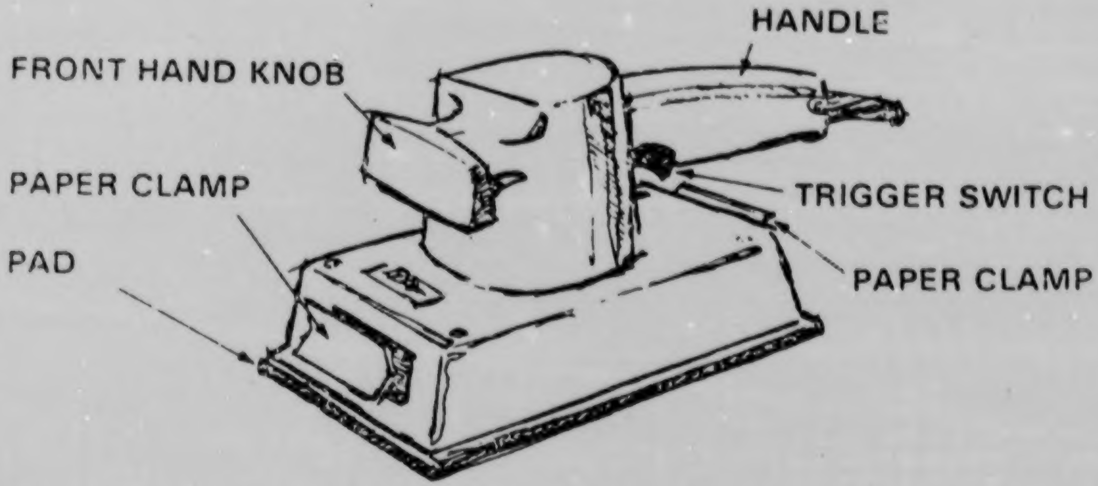


(Print the correct names)

Portable Electric Finishing Sander

For Safety —

1. Operate only with instructor's permission and after you have received instruction.
2. Remove jewelry, eliminate loose clothing, and confine long hair.
3. Make sure all guards are in place and operating correctly.
4. Always use proper eye protection.
5. Be sure switch is in off position before connecting to the power source
6. Make sure abrasive sheet is in good condition and properly installed on the tool.
7. Start the tool above the work, set it down evenly, and move slowly over a wide pattern area.
8. Lift the sander from the work before stopping the motor
9. Do not set the sander on the work bench until it has stopped running
10. Never lift or carry any portable electric tool by the power cord



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Portable Electric Finishing Sander

Name ____________________

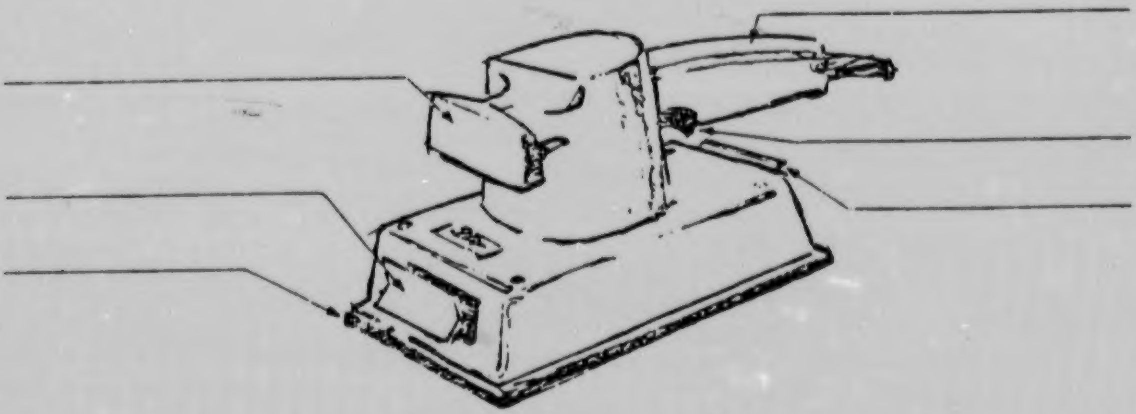
Class ____________________

Date ______________ Grade __________

Safety Quiz

(Circle True or False)

1. Eye protection must be worn when using the sander. T F
2. The abrasive sheet can be loosely clamped yet still be be safe and efficient. T F
3. The sander should never be carried by the power cord. T F
4. The tool should be turned on only after it is placed tightly on the material to be sanded. T F
5. Lift the sander from the work before turning it off. T F



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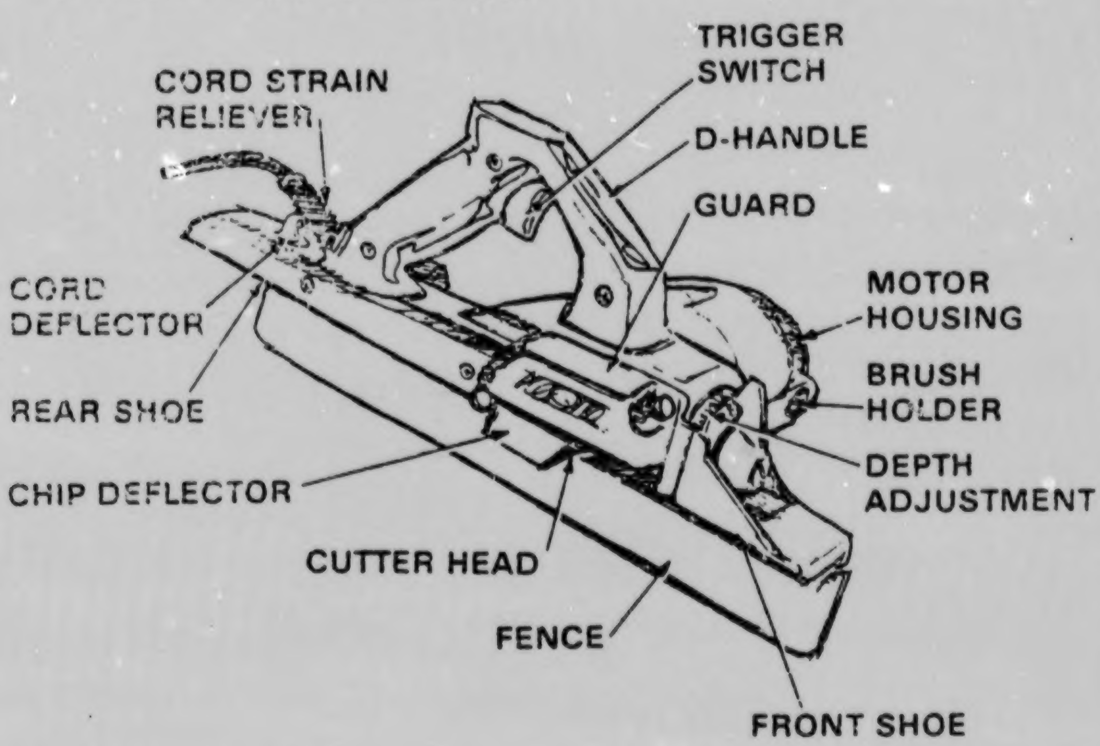
BEST COPY AVAILABLE

For Safety —

1. Operate only with instructor's permission and after you have received instruction.
2. Remove jewelry, eliminate loose clothing, and confine long hair.
3. Make sure all guards are in place and operating correctly.
4. Always use proper eye protection.
5. Before connecting to the power source, make sure the switch is in the off position.
6. Make all adjustments with the plane disconnected from the power source.
7. Place front shoe on the work piece, start motor, then more plane over work keeping pressure and speed constant.
8. Keep fence and the rear shoe tightly against the work piece until the cutter has cleared the work.
9. Keep hands on handle and motor housing, away from the cutter head.
10. Be sure of clearance for the motor.



Portable Electric Plane

Name ____________________

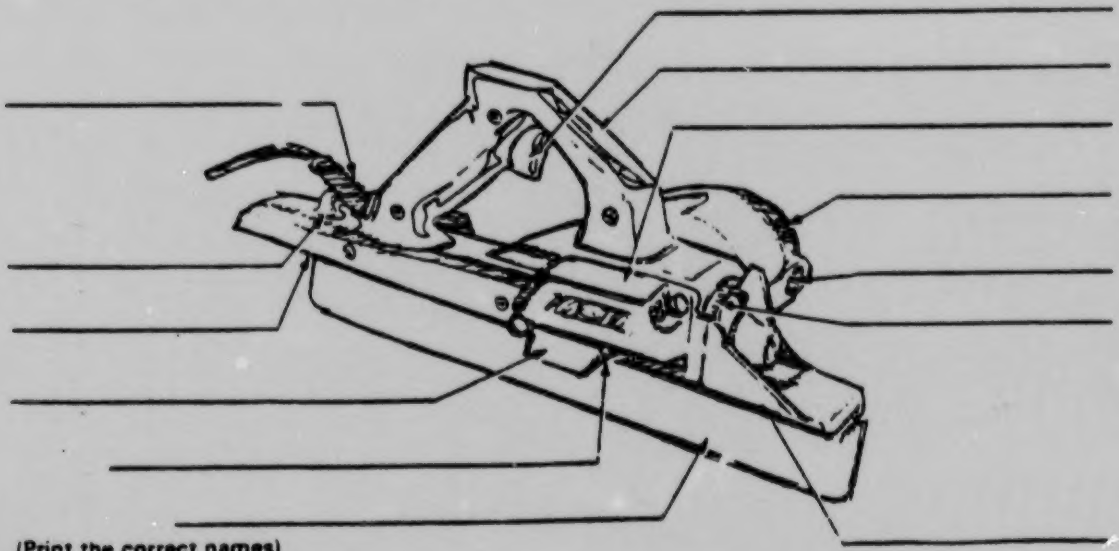
Class ____________________

Date ______________ Grade __________

Safety Quiz

(Circle True or False)

1. Since the cutter will not touch, it is allright to set the plane on the bench while still running. T F
2. The plane will cut deeper when more pressure is applied. T F
3. The plane should be disconnected before adjusting the depth of cut or the fence. T F
4. Eye protection is required when using a power plane. T F
5. The plane should be kept firmly against the work piece until the cut is completed. T F
6. The chip deflector is of no real safety value and can be removed. T F



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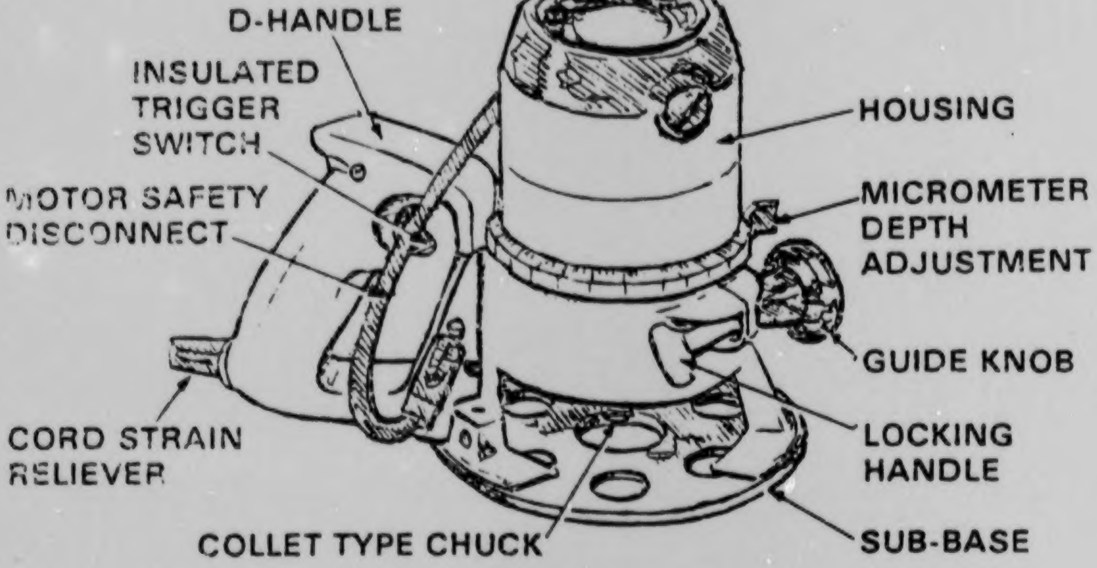
BEST COPY AVAILABLE

For Safety —

1. Operate only with instructor's permission and after you have received instruction.
2. Remove jewelry, eliminate loose clothing, and confine long hair.
3. Make sure all guards are in place and operating correctly.
4. Always use proper eye protection.
5. Be sure switch is off before inserting plug into power source.
6. Be sure collet chuck is tight and bit is secure.
7. Make sure work piece is clamped or rigidly held and the area of router travel is free of obstructions.
8. Hold router with both hands and keep cutting pressure constant. Do not force or jam into work.
9. Make a trial cut in a piece of similar scrap material.
10. Disconnect from power source when changing bits, making adjustments, or when router is not in use.



Portable Electric Router

Name ______________________

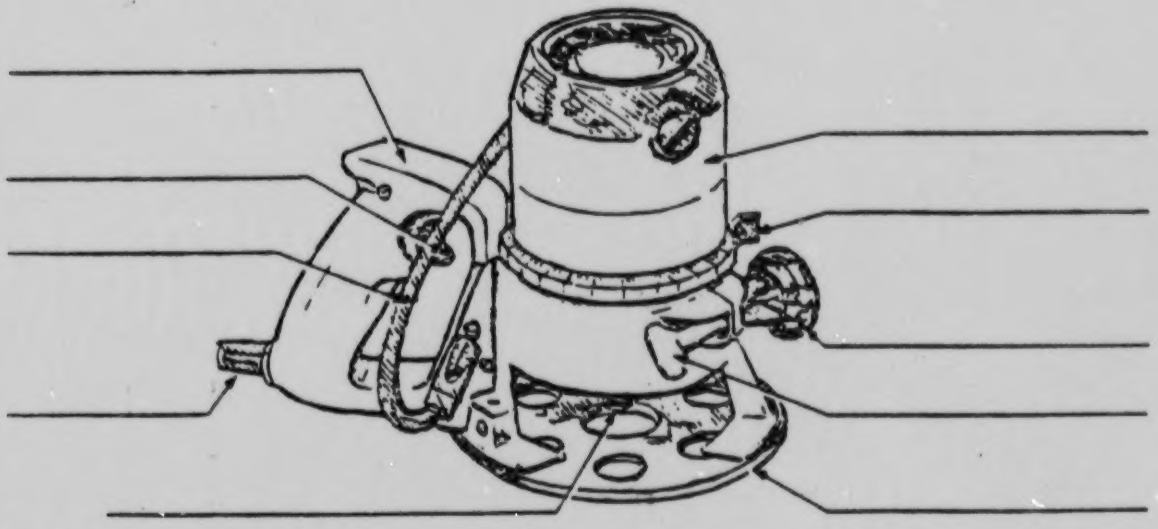
Class ______________________

Date ______________ Grade __________

Safety Quiz

(Circle True or False)

1. It is a good idea to make a trial cut in a piece of scrap wood. T F
2. A router should always be held with both hands. T F
3. A jogging motion should be used when cutting to keep the bit cool. T F
4. It is not necessary to clamp material being routed. T F
5. The depth of cut may be safely adjusted without unplugging the tool. T F
6. The router is not really guarded. T F



(Print the correct names)

HAZARDOUS FLAMMABLE LIQUIDS

Aerosol cans
Gasoline
Catalyst M.E.K. peroxide
Acetone
Lacquer and lacquer thinner
Adhering liquid
Paint thinner
Alcohol
Shellac
Japan dryer
Kerosene
Paint
Resin (polyester)
Stain
Danish oil
Varnish

APPENDIX 3

WRITING RESUMES

The following information was adopted from the Center for Career Planning and Placement Handbook, published by Northwestern State University, The Center for Career Planning and Placement, Natchitoches, Louisiana.

RESUME PREPARATION

In writing a resume, remember that there is no single prescribed format. You want to come across to a potential employer as an individual with unique qualities. Therefore, some imagination should be exercised in the writing of your resume.

Keep in mind that a good resume should always have sufficient information to tell the employer who you are, what you know, what you have done, and what you would like to do.

Generally speaking, there are four types of resumes--the Chronological, the Functional, the combination of those two, and a specialized type. For most graduating students with limited experience, the Chronological type resume is the most widely used. The Functional resume best serves persons with work experience (paid or unpaid) in which they used skills and abilities that readily transfer to other jobs. Sometimes a person may wish to combine the best of the two types to fit his/her needs. In some fields of work, a highly specialized resume is used.

Though there are many different types of resumes, there are general rules regarding resume preparation which should always be followed:

1. Resumes should be easy to read. Use margins and titles, logically arranged, to guide the reader.
2. Develop separate sections on education, work experience, personal data, etc., in such a way to enable the reader, who is probably skimming your resume along with many others, to get the highlights quickly.
3. Resumes should be typed and spaced neatly. Unlike cover letters which must be done individually, resumes may be duplicated. We suggest offset printing on 8½" x 11" white bond paper.
4. Include a photograph of yourself on your resume.
5. Try to limit your resume to one page. Some people with more experience will need to use two pages.
6. Be brief and to the point. Use phrases rather than prose and complete sentences.
7. Make sure it is complete, containing all pertinent information relevant to your education, work experience, and career objectives.
8. Employers expect you to know what kind(s) of work you want to do after you graduate. Therefore, give careful consideration to the Professional Objective section of your resume. Avoid philosophizing. If you don't have specific jobs in mind, and wish to speak in generalities--state which of your talents and abilities, etc., you would like to use. NOTE: Information received lately indicates that in some cases the

the career objective section can be a definite distraction on resumes. In many cases your career objective can be better explained in the cover letter which must accompany any resume. If this is done then one resume can be used for several different types of jobs. If, on the other hand, you definitely wish to be considered for only a particular field or type of position, then the career objective can be used.

9. Be sure to include all part-time and summer work experience. Explain what your duties and responsibilities were. If work experience is limited you may want to expand on your educational background.
10. There are mixed opinions as to whether references should be included in resumes "or furnished upon request". If you do include references, be sure that you have permission from each one and their complete address.
11. Professional resume writers are not recommended. Your resume should be you, and professional recruiters can easily recognize these types of resumes.

SAMPLE CHRONOLOGICAL TYPE RESUME

NAME

Permanent Address

0000 Louisiana Avenue
Baton Rouge, LA 00000
Tel. (504) 111-2234

Temporary Address

P. O. Box 0000, N.S.U.
Natchitoches, LA 714
Tel. (318) 357-1111

Professional Objective	Retail Sales Management.
Education	Northwestern State University of Louisiana. Natchitoches, Louisiana, BA Marketing, 1984. Special emphasis on retail sales and merchandising; considerable work in consumer economics and accounting.
Experience Summer 1983	Sales Clerk, Housewares Department. Arranged merchandise, displays, assisted buyer, handled consumer relations. Also assisted department manager in training new sales personnel, sold successfully on commission basis.
1980 to 1983	Sales Clerk. Worked part-time in specialty clothing store. Assumed increased responsibility during time of employment. Sold merchandise, arranged window displays, assisted inventory and ordering, assisted with advertising and copy layout.
Summer 1979 to 1980	Lifeguard. Performed general pool maintenance and gave swimming instructions to children and young adults.

Extracurricular Activities	Program Chairperson for Walter Porter Forum. Planned programs, contacted speakers from area business community, and coordinated programs. Corresponding Secretary for National Sorority. Handled all correspondence to national headquarters, alumnae, and others. Maintained files and records for group. Ordered materials.
References	Furnished upon request.

SAMPLE FUNCTIONAL TYPE RESUME

JOHN A. DOE

1442 W. Zip Avenue
Shreveport, LA 71234
318/555-0000

INDUSTRIAL RELATIONS MANAGER

Eight years experience in recruiting, hiring and training techniques, labor union contracts, insurance and pension plan administration.

Supervisor of Salaried Personnel, Placement and Management Development, Franklin Corporation, September 1976 - present, Responsibilities involved hiring and training all salaried employees for technical staff of 2,000; recruiting, college interviewing; supervision of management development program, performance appraisal program, psychological testing and counseling. Complete charge of office services, switchboard, mail room, stationery and stock rooms, plant safety program and staff technical library. Released, due to company retrenchment.

Personnel Director, Pratt Department Stores, September 1970 - September 1976. Developed and implemented a new personnel policy manual, a new training program for executive trainees and administered Workmen's Compensation, Blue Cross-Blue Shield, company insurance and pension plans. Participated in contract negotiations with representatives from Teamsters and other local unions. Resigned to take a position in industry.

Personnel Training Analyst, Municipal Savings Bank, August 1968 - September 1970. Developed training manuals and programs, set up classes to train bookkeepers, tellers, and operators of business machines; testing and placing; developed orientation program and manual for lower-level supervisory and clerical employees; responsible for audio-visual programs. Left to accept more responsible position.

****

Northwestern State University - M.S. Psychology, July 1968.
Emphasis in General Psychology
Thesis title: "Psychological Testing in Small Businesses"

Northwestern State University - B.S. General-Experimental Psychology, May 1976

Personal: Married, two children, Height - 5'11", Weight - 175 lbs. Will relocate. Will consider travel. Available at once.

COVER LETTERS

There are two general types of cover letters--the Letter of Inquiry and the Letter of Application. A Letter of Inquiry is sent with a copy of your resume to determine if an employer has an opening for which you may qualify. A Letter of Application is sent with a set of credentials when you know an employer has an opening in which you are interested. More specific suggestions which may be helpful are listed below:

1. Use good quality stationery suitable for business letters.
2. Typing is preferred. Sign your name in your own handwriting.
3. A good cover letter is neat and free of errors and erasures. If you are not a competent typist, hire one. Proofread your letters and examine their appearance with a critical eye. Correct spelling, punctuation, and English usage are essential.
4. Use proper forms for the letter and envelope address. Be particularly careful that the proper title of the person to whom the letter is addressed is used and the name spelled correctly.
5. Cover letters should be easy to read. Long sentences and paragraphs are disturbing to read. In most cases the letter can be kept from becoming long if you remember that the resume which will accompany your letter will contain many details which need not be repeated.
6. Ordinarily it is not good practice to comment on the salary in your cover letters.
7. Cover letters should be personalized--we advise against duplicating form letters.
8. Limit your cover letters to one page of not more than four brief paragraphs.
9. Follow up every letter you send which is not answered after two or three weeks with a letter restating your interest in the position and organization.

Hopefully, these suggestions are helpful. Included on the following page are suggested formats for both Letters of Inquiry and Letters of Appreciation.

SUGGESTED LETTER OF INQUIRY FORMAT

Return Address
City, State & Zip Code
Date

Inside Address to Employer
City, State & Zip Code

Salutation:

Tell WHY you are writing--inquire about positions in your field which may be available with the employer. Try to get the reader's ATTENTION in the first sentence so he/she will read the entire letter.

Tell WHY you want to work for the organization--try to stimulate INTEREST in you as a possible employee.

Tell WHY they should hire you--why you would be effective. Indicate significant experience and training in your field which makes you a desirable employee.

Refer to enclosed resume and availability of credentials (where they are on file and how they may be obtained) and availability of references. State your availability for interviews giving specific date(s) if possible, when you can be in their city and ask for an appointment then. State that you look forward to hearing from them. Ask for some type of ACTION.

Complimentary closing,

(Full Name Signed)

(Full Name Typed)

Enclosure (your resume)

SUGGESTED LETTER OF APPLICATION FORMAT

Return Address
City, State & Zip Code
Date

Inside Address to Employer
City, State & Zip Code

Salutation:

Tell WHY you are writing--identify position for which you are applying. Briefly mention your source of information about the opening. Try to get the reader's ATTENTION in the first sentence so he/she will read the entire letter.

Tell WHY you are interested in working for this particular organization in this type of endeavor. Briefly point out your achievements or training and related experience in the field that would make you effective on the job. Try to stimulate INTEREST in you as a possible employee.

Tell WHY they should hire you--try to create a DESIRE to know more about you.

Refer to the enclosed resume and to the availability of your references or indicate that your credentials including references are enclosed or are being sent by the Northwestern State University's Center for Career Planning & Placement by separate mailing. Restate your interest and availability, and request an interview, or give other suggestions of favorable and early reply. Ask for some type of ACTION.

Complimentary closing,

(Full Name Signed)

(Full Name Typed)

Enclosure (your resume or set of credentials)

THE PERSONAL INTERVIEW

The interview should be of value to both the applicant and the employer. For the applicant, it serves as a means of gaining information about such matters as the demands of the particular position, the community, the living conditions, salary, chances for advancement, and other factors relating to employment. Seldom is anyone employed without being interviewed by the employer. Most other devices, such as the resume, associated with the job campaign merely lead to the interview.

While these personal interviews are designed mainly as a prescreening process and rarely are candidates hired on the spot, do not assume that you can just walk into the interview room. It will be necessary to schedule an interview in advance since interviews are by appointment only and a recruiter can see only a limited number of candidates each day.

If you have had little or no experience in interviewing and are uncertain about what to say or how to say it, do what sales personnel do; prepare and practice. The following suggestions may be helpful to you in preparing for the interview.

BEFORE THE INTERVIEW

1. Learn as much as possible about the position and the prospective employer before the interview so that no time will be lost in discussing matters with which the recruiter assumes you are already familiar.
2. Have in mind the position or type of work you want to do.
3. Be punctual! Plan to arrive at the designed place 10 to 15 minutes early.
4. Remember you are looking for a job--appearances count. Look professional. Dress as if you already have the job you are seeking, not as a student. The way you look says a lot about you.
5. Prepare some questions before the interview. Your research on the organization should provide material for the questions you will ask.
6. Take the completed application or other materials required with you. You may wish to take a note pad and pen to the interview. Do not overdo notetaking and detract from your interview.

AT THE INTERVIEW

1. Be businesslike--but human. Be enthusiastic. Be pleasant and courteous. Smile.
2. Posture is the first thing noticed. Good posture can suggest health, vitality, and eagerness. Poor posture may indicate ill health and suggest apathy.
3. Listen carefully and let the recruiter direct the course of the interview. Take your cues from the interviewer. Respond thoughtfully and courteously to his/her questions.

4. When the interviewer gives you an opportunity to talk or ask questions, or there is a lull in the conversation, you should be ready to take advantage of the opportunity. The questions you prepared before the interview will help you to keep the interview flowing smoothly. You might interject information about yourself that does not appear on your resume. Such information should express why you would be of value to the organization.
5. Don't initiate the matter of salary, fringe benefits, and vacations. These will usually be covered in a subsequent interview.
6. When it is obvious that the interview is completed, leave promptly. As you leave, express your appreciation for the opportunity to appear for the interview and tell the interviewer that you will be glad to answer questions he/she may have at a later date.
7. As you leave the interview, be sure you know what the next step will be, when it will occur, and who will make it.
8. If you visit an employer's plant or office at their expense, seek reimbursement only for those expenditures which pertain to the trip.

PLAN YOUR WORK AND WORK YOUR PLAN

1. Take advantage of on-campus interviews available to you.
2. Use the yellow pages, listings from chambers of commerce, professional associations' directories, Standard and Poor's, Dun and Bradstreet directories and similar publications to identify and develop a list of potential employers.
3. Decide how and when you will approach potential employers. Research them to learn about their type of operation. Send them a letter of inquiry and a resume asking them for an interview. Go to them.
4. Respond to ads in the trade journals and newspapers. Send a letter of application and a resume or your credentials. Ask for an interview.
5. Before terminating a fruitless interview, expand your list of potential employers by asking for names of other individuals and organizations that may have need for someone with your skills and abilities.
6. Tell your family, friends, neighbors, faculty, etc., that you are job hunting. Ask them for leads.
7. Set a certain amount of time aside each day for job hunting, do errands and chores, etc., after you do your job hunting. Do not procrastinate.
8. Be active in your search--go to employers. You must make contacts to get results.
9. Be enthusiastic, self-confident, and persevering. You must go after jobs you want. It won't be easy!

APPENDIX 4

WOODSHOP CROSSWORD PUZZLES

APPENDIX 4

This section contains games and puzzles which may be used as vocabulary exercises throughout the year.

The first group of puzzles are computer generated Word Search puzzles. There are two puzzles for each unit covered in the course outline. Both puzzles have the same word list, but have different game boards.

The second group of puzzles includes miscellaneous Word Search and Crossword puzzles. These primarily deal with more specific topics.

These puzzles are designed as enjoyable learning exercises to develop word recognition and to learn definitions. They are excellent for extra credit, homework or as "in-class" assignments on days when the regular teacher is absent or is unable to conduct a regular lesson. The effectiveness of the puzzles will be greatly decreased if they are simply used as busy work.

ORIENTATION TO ADVANCED WOODS TERMS #1

```
B G G N I H T O L C E S O O L X C G U O A S B D S C H I J M J F
G O S M Z Z S U U G A E T Q V A X R O I Q E N A Y O F F J W I S
S A F E T Y C A B I N E T R T P O D O E B K F R F O L C P G Q Q
N I W X B W X G V U B I J Y Z W O I O D H E D D U P D F K Y U X
Y O B N D F E L P G O M N X N L W O L U T I Z H B E U M Q G K Q
L E I Z P M E E O K H X F I U X Q X N Y A U L E H R B E O U L X
K O Y T J O S C G D W J O V W M T A Z T R V J C R A E F B F V N
H K N F S I V R Y E W X M D M E L O S Z J A H B I T E Z L V C X
E X F G K U F I R S T A I D S W N R M H R C G E V I R K R Q H A
I N M L H C B X P F P S E S H E I J G N G J X S N O S A F E T Y
P L Q S Q A C M Y L R J Z B S F S C L X D P T R R N J J R Q Z I
K I J V K X I H O Q X S N U A V P P N A L R W S X R H E R A O C
M Y O E U Y Q R I C X S O V L T V Q A O D N E K U H L U Y P Z P
E R D P W R N V W P K P I K P M J G S R L X T S C D B P P G S S
E A C B S E M Q S C S O T A S F K I O D K B J J P I I L L U C X
V X R E P H L S S Y N W A Y L Y V H C Z F S Y S I I T O U A R O
W F T P W V O R U P N E L H A E F N R H G Y M Y K A R S N R S J
N V Z I L T W U Y M H R I O C C L X W Q E Q S S T S N A H D N B
I U D U N U U G S M K P T J I B L C U U H P R G X B X S T S R E
M X T S W G G U Q E H A N O M R A D I A T I O N B U R N S O U W
P N Q N G I U S Z G K N E N E S O L V E N T S G C R K I W Q R P
A G J R W R L I E W K E V O H V Z S H F E R O Q X W O T G G I S
C G P M D S L J S F L L E Q C H S A F U A G P V B O D V Y K E G
T Y E F K Y V N O H H G T P A V U H W X G A A I K R S S V Y R Z
N C N L K F I V V P E Z U T I L J Q C L P M B Y C A L J C N L D
U L K J Y G T I M N O R K K G N L I E K A N K S C K L Y T F H S
F D S J W K R S L F Q I J Q B E G S B E P C V W X C Q W C P R J
S W H L O T Q W G N G D A U M Y B X L H F G R J A U F N T J G Q
J S O X P A U V D O K B H F Q I C R H M E J K R X L H F V X L S
C E C C Y H R J Z W S Y S O V I S P O N T A N E O U S S J P D Y
C Y K O X E K D O C G Y O Q H F N R B D R B Q J G O Z X D M J O
V A A U Z D P F E Z Y J F R A U B X V V O X R F H W M T U I P F
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THERE ARE 31 WORDS HERE - CAN YOU FIND THEM?

FIND THE WORDS IN THE PUZZLE ABOVE. WORDS MAY BE HORIZONAL, VERTICAL, DIAGONAL, FORWARD, OR BACKWARDS.

HERE ARE THE WORDS TO LOOK FOR:

CHEMICALSPLASH
COMBUSTION
DUST
EXPLOSIVE
FIRSTAID
GOGGLES
HOUSEKEEPING
JEWELRY
LOOSECLOTHING
OSHA
PUSHSTICK
RESPIRATORS
SAFETYCABINET
SHOCK
SPARKS
VENTILATION
CHIPS
COOPERATION
EARPLUGS
EXTINGUISHER
FIRSTAID
GUARDS
IMPACT
LONGHAIR
OILYRAGS
POWERPANEL
RADIATIONBURNS
SAFETY
SAFETYZONES
SOLVENTS
SPONTANEOUS

227

ORIENTATION TO ADVANCED WOODS TERMS #1

```
. . G N I H T O L C E S O O L . . . . . . . . . S C . . . . . .
. . . . . . . . . . . . . . . . . . . . . . . A . O . . . . . .
S A F E T Y C A B I N E T . . . O . . . . . F . . O . . . . . .
N . . . . . . . . . . . . . . . . I . . . E D . . P . . . . . .
. O . . . . . . . . . . . . . . . . L . T I . . . E . . . . . .
L . I . . . . . . . . . . . . . . . . Y A . . . . R . . . . . .
. O . T . . . . . . . . . . . . . . Z T R . . . . A . . . . . .
. . N . S . . . . . . . . . . . . O S . . A . . . T . . . . . .
. . . G . U F I R S T A I D . . N R . . . . G E . I . . . . . .
. . . . H . B . . . . . . . H E I . . . . . X S . O S A F E T Y
. . . . . A C M . . . . . . S F S . . . . P T . . N . . . . . .
. . J . . . I H O . . . N . A . . P . . L R . S . . . . . . . .
. . . E . . . R I C . . O . L . . . A O . . E K U . . . . . . .
E . . . W . . . . P . P I . P . . . S R . . . S C D . . . G . .
E A . . . E . . . . S O T . S . . I . . K . . . P I . . . U . .
. X R . . H L . . . . W A . L . V . . . . S . . . I T . . A . .
. . T P . . O R . . . E L . A E . . . . . . . . . . R S . R . .
. . . I L . . U Y . . R I . C . . . . . . . . . . . . A H D . .
I . . . N U . . S . . P T . I . . . . . . . . . . . . . T S . .
M . . . . G G . . E . A N . M R A D I A T I O N B U R N S O U .
P . . . . . U S . . K N E . E S O L V E N T S G . . . . . . R P
A . . . . . . I . . . E V . H . . . . . . . O . . . . . . . . S
C . . . . . . . S . . L E . C . . . . . . G . . . . . . . . . .
T . . . . . . . . H . . . P . . . . . . G . . . . . . . . . . .
. . . . . . . . . . E . . . I . . . . L . . . . . . . . . . . .
. . . . . . . . . . . R . . . N . . E . . . . . . . . . . . . .
. . S . . . . . . . . . . . . . G S . . . . . . . . . . . . . .
. . H . . . . . . . . . A . . . . . . . . . . . . . . . . . . .
. . O . . . . . . . . . H . . . . . . . . . . . . . . . . . . .
. . C . . . . . . . . . S . . . S P O N T A N E O U S . . . . .
. . K . . . . . . . . . O . . . . . . . . . . . . . . . . . . .
. . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . .
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ORIENTATION TO ADVANCED WOODS #2

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C N S C O W Q S W S D A V E N R Q V F D S N L O N G H A I R I H
K L V P R J R U Q I D K J A C S M C B A A E O D E E D R H X J V
M N P E R Q C K W S N V N N I S O S F A A M S I Z O Q E K C B O
X M Z N V B F G A P C C J I O R C E V S A D F F T N R S R C X V
A O B D D I D G S I K X P G W D T W B B H H O B T A A U P O B Y
Z K V Z X W S T U H H X O Q U Y F L U Y K M S P M K R O B Q J B
N Y F F C E N O U C O W L N C S H O C K T L L Q L Z V E H J Z E
H H Q N U E S E L G G O G A T C A P M I I E A G W J C N P J H P
Z O Z A V C C K P P O B B K G T N L S Z G Z F U R C M A G O Y L
M K R L X Z Y D F E X I N G X X L H S D F L O A N F G T G F O G
H S O Z C H D I E Y N E Y L B Q S R O T A R I P S E R N F O X C
T S H E B X R B U E O A P J N W Y F O X O D T Q H Z S O R Q C X
G F M Y E S F X T B J V W E I U K G V R Z L Q T M U G P Q I K U
R C S X T K F J U O B Z M I L I E Z M Z H Y B A F M P S W J C K
A N K A O S Z G K C B Z N P A I F K B Z Q O X P F Z A J V N H Q
K S I D J I O Z K Z E X R A B C T B J Y C S F O S J D U R U S Y
B D Q L J T J C E A C D Y Y X Y W F Z S A F U W W S D V B V B X
D E A H D E I A D W Y U L M B B R X E B B X X E G P W M L Y X E
B L W V S T W W D V J O V E N T I L A T I O N R H H P P Z V V K
U Y Q Z S A S E L H O R O S S K Y T R L S L P P X Z U Y Y V Q F
R Q A H R P L V L S W G W A T A A F P E B V Z A N W A U R J S Y
W O S C A D J P E R N G F O A I Z X L I F C V N S M F O N V O A
K U V R I E G C S I Y E O S O M I T U M L B O E Y W I G O F V I
P A K M S W L S P L T H S H N X Q K G R I H W L X X R G I V E X
C S E G Z O G E Y Y A W G A H D O V S K M J D N Q X S L T L T J
R J B J T A E V Z D W C X C B S P G C L U X M O C Y T S S Z T R
K D O H R K P O M R A D I A T I O N B U R N S D Q M A A U J Q I
I D I Y E W N L T S M T L M R E H S I U G N I T X E I P B X O O
K N L S S E G B C M A F S G E K S D R A U G I D K R D Y M L R S
G I U S S J F W G Z U B O U G H N H Z Z B M J J J N B L C K Q I
O O G W G U G T B H O W V N D I C X B C K Y W A D Z L B C Z O V
H M N D F L G I T S J N X S M G X H M Q A U E D Z A J Q I E A Q
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FIND THE WORDS IN THE PUZZLE ABOVE. WORDS MAY BE HORIZONAL, VERTICAL, DIAGONAL, FORWARD, OR BACKWARDS.

HERE ARE THE WORDS TO LOOK FOR:

CHEMICALSPLASH
COMBUSTION
DUST
EXPLOSIVE
FIRSTAID
GOGGLES
HOUSEKEEPING
JEWELRY
LOOSECLOTHING
OSHA
PUSHSTICK
RESPIRATORS
SAFETYCABINET
SHOCK
SPARKS
VENTILATION

CHIPS
COOPERATION
EARPLUGS
EXTINGUISHER
FIRSTAID
GUARDS
IMPACT
LONGHAIR
OILYRAGS
POWERPANEL
RADIATIONBURNS
SAFETY
SAFETYZONES
SOLVENTS
SPONTANEOUS

ORIENTATION TO ADVANCED WOODS #2

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. . . . . . . . . . . . . . . . . . . . S N L O N G H A I R . .
. . . . . . . . . . . . . . . . . . . A . . O . . . . . . . . .
. . . E . . . . . S . . . . . . . . F . . . . I . . . . . . . .
. . . . V . . . . P . . . . . . . E . . . . . . T . . S . . . .
. . . . . I . . S I . . . . . . T . . . . . . . . A . U . . . .
. . . . . . S T . H . . . . . Y . . . Y . . . . . . R O . . . .
. . . . . . N O . C . . . . C S H O C K T . . . . . . E . . . .
. . . . . E S E L G G O G A T C A P M I . E . . . . . N P . . .
. . . . V . . . . P . . B . . . . . . . . . F . . . . A . O . .
. . . L . . . . F . X I . . . . . . . . . . . A . . . T . . O .
. . O . . . . I . . N E . . . . S R O T A R I P S E R N . . . C
. S . . . . R . . E . . . . . . . . . . . . . . . . . O . . . .
. . . . . S . . T . . . . . . . . . . . . . . . . . . P . . . .
. . . . T . . . . . . . . . . . . . . . . . . . . . . S . . . .
. . . A . . . . . . . . . . . . . . . . . . . P . . . . . . . .
. . I . . . . . K . . . . . . . . . . . . . . O . . . . . . . .
. D . . J . . C . . . . . . . . . . . . . . . W . . . . . . . .
. . . H . E I . . . . . L . . . . . E . . . . E . . . . . . . .
. . . . S T W . . . . O V E N T I L A T I O N R . . . . . . . .
. . . . S A S E . . O . . . S . . . R . . . . P . . . . . . . .
. . . H . P L . L S . G . A . . . . P . . . . A . . . . . . . .
. . S . A . . P E R N . F O . . . . L . . . . N . . F . N . . .
. U . R . . . C S I Y E . S . . . . U . . . . E . . I . O . . .
P . K . . . L S P L T . . H . . . . G . . . . L . . R . I . . .
. S . . . O G E . Y A . . A . . . . S . . . . . . . S . T . . .
. . . . T A E . Z . . C . . . . . . . . . . . . . . T . S . . .
. . . H R K . O . R A D I A T I O N B U R N S . . . A . U . . .
. . I Y E . N . . . . T . M R E H S I U G N I T X E I . B . . .
. N L S . E . . . . . . S . E . S D R A U G . . . . D . M . . .
G I U . S . . . . . . . . U . H . . . . . . . . . . . . O . . .
O O . . . . . . . . . . . . D . C . . . . . . . . . . . C . . .
H . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . .
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REVIEW OF MATERIALS TERMS #1

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A S W F K X M F S F G W T H E H N I D T B L D D Y L R A Y F X T
K G H X F Z D P N M T D I S S H G P H V X L A K K K W R K M K P
X E R X Y R I E U L D D Y T X I A V R M W D Q A R L D P G O U L
L D C C R H G I W S A F W O O D N K F R X D P G Z R V T R X J H
D A S N C O B H Q A X J Q N I C I I V E U R B M H A U D U W K H
R R V R R M X V W C S E H V T L L W F K S A J F C M H O U R C K
A G L Q A L I O P P Y N U A N O H M B R L O I V B R S G M D V C
O F D C J W Z D S W C H I D X Q M F D O Z B D G K P Q Z V D L B
B A Z O W P M W O G X T R A R T K M O N P E D S E I L P S F Z O
R Y U D O C O Y G V B I M P L Q D X Z C I L U R P Y C Q L C L Y
E L O D L W S N H A E E Z P V P L C U L T C C A K T Q G Z Z C J
B Q X S E C R W O D F Z J E S F I O Y O T I U T I E G L H Z W N
I Q H Z H U V E U A B J U S N O W O A S F T W O R M G H S V K X
F J P N U H O A M A S S K J F X K D N E K R A D U Z A N H D F U
M V W R Y V O J U M W P X Z Z R P P G D E A G W I R C G H M Y M
N B Z J Z S P M K U U R Y L O N K B J G A P A G D A H T N N E N
N Y H S G P Z N O R K S I P O Y A N D R R K S B J D N N S X E T
A U J Q Y T J O T A S B Q S N S N H Z A W Q O O Z U S S B X L P
I F I H D C M U C X P X Y D E I R D R I A A S D F A T P R O J V
P E L T E E C B P Z G H N Q L M E X X N R S O M X T E N V S R B
S H C I R Y S B H W J R G U V P E D A D C O S K N W W C O E O Z
C S C L R C O M M O N K N A Y T O D V G W L A C T X W O X R A Z
F H E A R T W O O D M S R R B C H D U G B F F H Q H I M O X P K
B C T H O G U I P I O N N T H G J S N L N I A R G N E P O D Z E
M O L E O P J K C F Q X B E M A U I P C L R M Z S S Q B L M S K
R Z N E V X K E B F N G C R L U R T H B D A H N E N P S X D H A
X N G N A E T Z C S R K A S Y P M N Z W P V R T R F R K Z B G H
S H F V S R N J X O Y S K A S X I M O Q R I E Y I T V Y O I O S
A B B U B O D E C B X B G W K G F O U M A R O A R P Y Q U D M Y
D B I C U W D T E O T K B E Y W D S F O W W P J O A Z C R K W L
G Z B D C F R Q X R K J F D M S N R D Y T K S N Q P Y U W C L Z
D R H C R W N B Y X L I R R W B L N V R T T F R N P Q S L R C G
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HERE ARE THE WORDS TO LOOK FOR:

AIRDRIED
CHECK
CLOSEDGRAIN
FAS
FINISH
HARDBOARD
HEARTWOOD
MEDULLARYRAYS
PARTICLEBOARD
PLAINSAWED
QUARTERSAWED
RWL
SAPWOOD
SOFTWOODS
SUMMERWOOD
WARP

CAMBIUM
CLEAR
COMMON
FIBERBOARD
GRADE
HARDWOODS
KILNDRIED
OPENGRAIN
PITH
PLIES
ROTARYCUT
S2S
SHAKE
SPRINGWOOD
VENEER

REVIEW OF MATERIALS TERMS #1

```
. . . . . . . . . . . . . H . . . . . . . . . . . . . . . . . .
. . . . . . D . . M . . . . S . . . . . . . . . . . . . . . . .
. E . . . . . E U . . . . . . I . . . . . . . . . . . . . . . .
. D . . . . . I W S A P W O O D N K . . . D . . . . . . . . . .
D A . . . . B . . A . . . . . . I I . . . R . . . . . . . . . .
R R . . . M . . . . S . . . . L . . F . . A . . . . . . . . . .
A G . . A . . . . . . N . . N . . . . . . O . . . . S . . . . .
O . D C . . . . . . . . I D . . . . . . . B . . . . . 2 . . . .
B . . O . . . . . . . . R A . . . . . . . E . S E I L P S . . .
R . . . O . . . . . . I . . L . . . . C . L . . . . . . . . . .
E . . . . W . . . . E . . . . P . . . L . C . . . . . . . . . .
B . . . . . R . . D . . . . . . . . . O . I . . . . . . . . . .
I . . . . . . E . . . . . . . . . . . S . T . . . . . H . . . .
F . . . . . . . M . . . . . . . . . . E . R . . . . A . . . . .
. . . . . . . . . M . . . . . . . . . D . A . . . R . . . . . .
. . . . . . . . . . U . . . . . . . . G . P . . D . . . . . . .
. . . . . . . . . . . S . . . . . . . R . . S B . . . . . . . .
. . . . . . . . T . . . . . . . . . . A . . O O . . . . . . . .
. . . . . . . U . . . . . D E I R D R I A A . D F . . . . . . .
. . . . . . C . . . . . . Q . M . . . N R . O . . T . . . . . .
. . . . . Y . . . . . . . U . . E . . D . O S . . . W . . . . .
. . . . R C O M M O N . . A . . . D . . W . A . . . . O . . . .
. H E A R T W O O D . . . R . C . . U G . . F H . . . . O . . .
. C T . . . . . . . . . . T H . . . N L N I A R G N E P O D . E
. O L . . . . . . . . . . E . . . I . . L R . . . . . . . . S K
R . . E V . . . . . . . C R . . R . . . D A H . . . . . . . . A
. . . . A E . . . . . K . S . P . . . W P . R T . . . . . . . H
. . . . . R N . . . . . . A S . . . O . R . . Y I . . . . . . S
. . . . . . . E . . . . . W . . . O . . A . . . R P . . . . . .
. . . . . . . . E . . . . E . . D . . . W . . . . A . . R . . .
. . . . . . . . . R . . . D . S . . . . . . . . . . Y . W . . .
. . . . . . . . . . . . . . . . . . . . . . . . . . . S L . . .
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REVIEW OF MATERIAL TERMS #2

```
S E U A F D H O X D N K S F J N U H O L Q R J Y E K C M Y D T K
W D C T W N Q Q J L L V Y R P D N R I K U L K O G G I S W Q N A
S G O Z K I L N D R I E D U R B E P P M E W M X I I 2 Y Q Y T K
F C N O O M S N H C K I U P I P H P H D N O I D S S N R F W X C
X N O N W G F J D G O L F M J L Z A N I A R G D E S O L C C N R
N U M R R T H S I N I F S O Z I N Y Y Q P K H M Y T W M B E W L
N Y M I M E F Q D X J Y Z I P E B D Y P H L W R C X P U Q P Z P
Q V O N I F Q O W R A E L C Z S F H F A T T J X W E C V T F T H
F S C S Q F I G S R O U T O K Z A O R R H U I E B N F Q Q P S E
Z H W S R J J B Y B P Y F C S A O P E T O E C P Y X B B P D N A
N S I Q T A O R T Z J L F Z V Y E N E I I N D Y U W A X X V R R
K E N B J A A A L U H L S F J M C D N C Y R D J R E Y I L M T T
O E N X G L A I R D R I E D N X G R E L C H M U Q A D M W T G W
X E G P L P M F I B E R B O A R D A V E W N L N U S T A F Z E O
I Y R U J U M X X D M X L C N C O O V B I N U U A L R O R A Z O
U V D X I A P U E Y U E U X C I G B M O V H V J R A B F R G S D
K E T B C P Y W A Y G I J M U H P D D A W E R H T L M Q Q K S Q
M X M X C H A R D W O O D S D R I R W R L L V B E O F P W C F W
V A B F J S W E E P R S W E D V R A X D J P S W R V C B T J M L
C T A N N F J A I F T N X T X Z L H N D R A R R S U Y A A D S H
L A M I Y K Y P J O Y S U W K C E H C Q P H E P A O W R S X Y X
F J A D T H Z K L A V S N I F C S G L W H C H S W Y S W U N Z H
F L O T N Z L I X Q L A O A W V S J O F G U Z R E U Z H A J S D
P J Q H Y D Q L W A R P P R Q H A O H E R H Y H D G F H A P B O
Y X T X E U M X F B S M U G U E D S U M M E R W O O D B R K T M
Z J Y Y M I O W K R C L S A U E P F A C M F T H R H I I H F E Q
N C X P Z M Q W X L G H C F L D C E Y I H T M H N F N R N Y N D
D E X O A F U W K F F C N I A R G N E P O L D K D G G U Q Z J F
Y C U K F D U A I H K X E W I A T Y O S L I Q R W E W C B O P L
A Z K O F E B L K W G F K I G A F Q K Y V Y M O N T D I D G Z H
W M U L F G J W J R H F W S I M H G O I I S O E K N Q Z B O K E
T T H V R H E K H D M G H P B U K U O O J D X G O S I C O F O G
```

THERE ARE 31 WORDS HERE - CAN
YOU FIND THEM?

HERE ARE THE WORDS TO LOOK FOR:

AIRDRIED
CHECK
CLOSEDGRAIN
FAS
FINISH
HARDBOARD
HEARTWOOD
MEDULLARYRAYS
PARTICLEBOARD
PLAINSAWED
QUARTERSAWED
RWL
SAPWOOD
SOFTWOODS
SUMMERWOOD
WARP

CAMBIUM
CLEAR
COMMON
FIBERBOARD
GRADE
HARDWOODS
KILNDRIED
OPENGRAIN
PITH
PLIES
ROTARYCUT
S2S
SHAKE
SPRINGWOOD
VENEER

FIND THE WORDS IN THE PUZZLE ABOVE. WORDS MAY BE HORIZONTAL VERTICAL, DIAGONAL, FORWARD, OR BACKWARDS.

NAME________________________________

REVIEW OF MATERIAL TERMS #2

```
S . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . .
. D . . . . . . . . . . . . . . . . . . . . . . . . . S . . . .
. . O . K I L N D R I E D . . . . . . . . . . . . . 2 . . . . .
. . N O . . . . . . . . . . . P . . . . . . . . . S . . . . . .
. . O . W . . . . . . . . . . L . . N I A R G D E S O L C . . .
. . M . . T H S I N I F S . . I . . . . . . . . . . . . . . . .
. . M . . . F . . . . Y . . . E . . . P H L W R . . . . . . . .
. . O . . . . O . R A E L C . S . . . A T T . . . . . . . . . H
. . C . . . . . S R . . . . . . . . R R . U I . . . . . . . . E
. . . . . . . . Y . . . . . . . . . E T . . C P . . . . . . . A
. . . . . . . R . . . . . . . . . . E I . . . Y . . . . . . . R
. . . . . . A . . . . . . . . . . D N C . . . . R E . . . . . T
. . . . . L A I R D R I E D . . . R E L . . . . Q A D . . . . W
. . . . L . M F I B E R B O A R D A V E . . . . U . T A F . . O
. . . U . U . . . D . . . . . . . O . B . . . . A . . O R A . O
. . D . I . . . E . . . . . . . . B . O . . . . R . . . R G S D
. E . B . . . W . . . . . . . . . D . A . . . . T . . . . . . .
M . M . . H A R D W O O D S . . . R . R . . . . E . . . . . . .
. A . . . S . . . . . . . . . . . A . D . . S . R . . . . . . .
C . . . N . . . . . . . . . . . . H . . . A . . S . . . . . . .
. . . I . . . . . . . . . . K C E H C . P . . . A . . . . . . .
. . A . . . . . . . . . . . . . . . . W . . . . W . S . . . . .
. L . . . . . . . . . . . . . . . . O . . . . . E . . H . . S .
P . . . . . . . W A R P . . . . . O . . . . . . D . . . A P . .
. . . . . . . . . . . . . . . . D S U M M E R W O O D . R K . .
. . . . . . . . . . . . . . . . . . . . . . . . . . . I . . E .
. . . . . . . . . . . . . . . . . . . . . . . . . . N . . . . .
. . . . . . . . . . . . N I A R G N E P O . . . . G . . . . . .
. . . . . . . . . . . . . . . . . . . . . . . . W . . . . . . .
. . . . . . . . . . . . . . . . . . . . . . . O . . . . . . . .
. . . . . . . . . . . . . . . . . . . . . . O . . . . . . . . .
. . . . . . . . . . . . . . . . . . . . . D . . . . . . . . . .
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TERMS FOR DESIGNING FURNITURE AND CABINETS #1

```
R U K H V C X F X N Q K A F R E N C H P R O V I N C I A L E L I
A P G O F M F S E B W R K Z R T X U L J G E M Q U Y P O L I P B
K S N P W J U I B G M M F V V D X C C Y U Y K O G K G A D U M G
X E M M J S I H U T B E F O E A J O S L X K Q U T O D P Y F T L
C I T E H T S E A J H H T M C F N U Y H R I C N B N E I F H A P
S A C S E V I T I M I R P T Z T G X R P I P U R E L F P P Q Z Z
S H A K T K G I G F U I T H E W I H T A Q I E P M S H E Y P Q C
U S E F U L N E S S E R K M B S R W T U U H P O L D T R C U I H
E Z I R I A Y V M D U Q P P V C T D F Q T I Z R G I G I K Q Q B
M D Y I I U S O Z T W O W S J Y Q Z H O H Y W M H Q N B O Y V B
A W C C Y D T N K T R I T E J T Y F R C V U T W F Y E Y Z D Z I
H Y I M M W A U P A F B F S E C O B O J A K E I V A R R Q R P I
E F N U S X T N R Q A B H C E B S V B V F L N M C G T B F J X V
I K X U S Q J Y W L S V N D O M W E I V P A M G P A S A A U A B
X Q G W C A A G A V H A S E A V W X P P I Q G K X B P K M P S D
D F D W D N V N M R R G Z D Z X S X E R S B U L J C J A P E D D
N X X V X I C J D A D T A W Y I E H O L T F M E E D J X C R H U
T L F O W E O F E B F V E T U V S T K M K D T P E G J B L I C W
C J I K K I L P E B H W I O E G C W L P N X G K U N M J E O G I
G N V F N Z P E W K E L L R B I T A X X C L M D E H A U H D A N
W N E F P A X R W L I A S W V G N H P M I W T W S L G N H S Z K
P R X Y X T R J H B G A R D Y O K X S P O T R E M P H J N V M K
H B Q B T S U A A Y T B U L I Y P A Z I N W T C H G D M E E N H
J C J W Z G Z R O I Q N F T Y N O I T C N U F H T I A L F C V H
N T C I N B I S L H C Z I I Q A O F Z C Y A Y H A L O V R E O R
T U F I W S B I F A L D Q K D F M V V K A J P O R R Z B S A A A
A E B A E L T B N R A G I Y S P K E A H V S T S O H M I G M V Z
F H U D Z Y W P Z R T P S H M U V B R G S R A R R S N O A E F X
L I T Q B S H L T M Z X S K X T C G Q I V A S O I Y Y D N Q S A
N W O D H Y A U K K M G X Y S C O L L N C M Q L D Z N Z S Y C M
P Z B M F L V L X D O L H S R Y I Z B Q A A T O E L Y T S Y V M
T R O E A E N D T Q L Y S D B W T X W U G E N C I W M Q L B J J
```

THERE ARE 28 WORDS HERE - CAN
YOU FIND THEM?

HERE ARE THE WORDS TO LOOK FOR:

ADAMSBROTHER
APPEARANCE
CAPACITY
COLOR
DESIRABILITY
EARLYAMERICAN
FUNCTION
HEPPLEWHITE
PERIODS
QUEENANNE
SIZE
STRENGTH
TRADITIONAL
VERSATILITY

AESTHETIC
BALANCE
CHIPPENDALE
CONTEMPORARY
DUNCANPHYFE
FRENCHPROVINCIAL
HARMONY
LOUISXIV
PRIMITIVE
SHERIDAN
SPANISH
STYLE
USEFULNESS
VICTORIAN

FIND THE WORDS IN THE PUZZLE ABOVE. WORDS MAY BE HORIZONAL, VERTICAL, DIAGONAL, FORWARD, OR BACKWARDS.

NAME________________________________

TERMS FOR DESIGNING FURNITURE AND CABINETS # 1

```
. . . . . . . . . . . . . F R E N C H P R O V I N C I A L E . .
. . . . . . . . . . . . . . . . . . . . . . . . . . . . L . . .
. . . . . . . . . . . . . . . . . . C . . . . . . . . A . . . .
. . . . . . . . . . . . . . . . . O . . . . . . . . D . . . . .
C I T E H T S E A . . . . . . . N . . . . . . . . N . . . . . .
S . . . E V I T I M I R P . . T . . . . . . . R E . . . . . . .
. H . . . . . . . . . . . . E . . . . . . . E P . . H E . . . .
U S E F U L N E S S . . . M . . . . . . . H P . . . T . . . . .
. . . R . . . . . . . . P . . . . . . . T I . . . I G . . . . .
. . . . I . . . . . . O . . . . . . . O H Y . . H . N . . . . .
. . . . . D . . . . R . . . . . . . R C . . T W . . E . . . . .
. . . . . . A . . A . B . . E . . B . . . . E I . . R . . . . .
. . . . . . . N R . A . . C . . S . . V . L N . C . T . . . . .
. . . . . . . Y . L . . N . . M . . I . P A . . . A S . . . . .
. . . . . . . . A . . A . E A . . X . P I Q . . . . P . . P . .
. . . . . . . N . . R . . D Z . S . E R . . U . . . . A . E . .
. . . . . . C . . A . . A . Y I . H O . . . . E . . . . C R . .
. . . . . E . . E . . . . T U V S T . . . . . . E . . . . I . .
. . . . . . . P . . . . I O E . C . L . . . . . . N . . . O . .
. . . . . . P . . . E L L R . I . A . . . . . . . . A . . D . .
. . . . . A . . . . I A S . V . N H . . . . . . . . . N . S . .
. . . . . . . . . B . A R D . O . . S . . . . . . . . . N . . .
. . . . . . . . A . T . U L I . . . . I . . . . . . . . . E . .
. . . . . . . R . I . N . T Y N O I T C N U F H . . . . . . . .
. . . . . . I . L . C . I . . A . . . . . A . . A . . . . . . .
. . . . . S . I . A . D . . . . M . . . . . P . . R . . . . . .
. . . . E . T . N . A . . . . . . E . . . . . S . . M . . . . .
. . . D . Y . P . R . . . . . . . . R . . . . R . . . O . . . .
. . . . . . H . T . . . . . . . . . . I . . . O . . . . N . . .
. . . . . Y . . . . . . . . . . . . . . C . . L . . . . . Y . .
. . . . F . . . . . . . . . . . . . . . . A . O E L Y T S . . .
. . . E . . . . . . . . . . . . . . . . . . N C . . . . . . . .
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DESIGNING FURNITURE AND CABINETS #2

```
Q N H M A Q D X U E E X E D R V P G D X S V Q Z C T N Y X R L Z
H H L E X O T Y R Z I H U T A C L Y S R T I W X O S A T S L Q T
O Z U E V U E X V P D I R H O Q Y N T R G C G H L G C P L L S U
N K C X J R O F U O N O N N T U G V J H Z T L U I G I E Z Y S S
U G L U C L Q P H C K M T T C B H V Q O D O J U J O R T F E C T
Q J I X X D S O Z P E E O I Y P V T G X Z R I K I Q E L H W Y J
K M U S G W R T E T M I T W A R U A E I E I E I C C M B A B K U
J K W H C V N U R P S C C O A U Y Y Q C W A V P H L A O K G S K
I O Y C O K B F O E I L J X V Y H K N C Z N I Q N F Y V M I D S
E Y G F K R E R W A N B V W K W I A Q P V V T D G A L Q D G D E
H J H E R Q A E L A G G A E Q S R V O A M R I O A X R U B O B G
B D X L J R P N S O S M T G L A S C O R Z C M P O P A P I T H X
H D S O Y E B C H S S V I H E Y C V R H A M I I E U E R K A T T
H A R M O N Y H F G E R E P U P T I S E E R R J C C E R V D R E
V A H S I N A P S R N W P T W B G S S V V P P G A P W G I J A Q
Y S F C O L O R N U L A J O Z Q K T W G O Y P T T Y J C X A D E
X W U K M Q R O N A U D B R R V H B K F J V H L X F H V S E I C
E Y N C R P B V L Y F A X T X E Z L V A Z U G S E I H H I X T S
G T C Z G E G I T K E Y W X T U H L F D O Y P C P W X P U F I E
C I T O Y K Y N R T S Q M I R B Q X L V U A L P N B H H O Y O N
M C I O F D L C Y X U V C J G J L X M L A N E P A W W I L G N N
S A O B H K G I Y D L K E B S U R M S I L N C L G P I Y T H A A
H P N O U O F A D A M S B R O T H E R O D W A A V I D K Y E L N
E A S D Z Z H L F W N J F M S I X P D A U N S T N A R C O T I E
R C K X A Y T Y Y F R P J I T A Y Q L Z C O I T L P G N X R A E
I J O D I P X V T J L J O W N L T E W E H B V G X T H K D P F U
D C A H Y V V U Y J H K H H W S A I D C T X I N B F H Y X D H Q
A X H V K C O E B W L C Z J I S H O L I O R U S B W P M F J J F
N S I Z E O E Z I P N M V E U D D E S I R A B I L I T Y C E I K
Q Y F O U L O R C B X J D M Z Y Z M I X T U E E E H H I S M Z T
W V J U H B M N T C L P W P Z E J M W J J Y H W Q S O S C F G W
Y S M O D K G R G U Y W O J X F V F E W A V M B N K M E F M L X
```

THERE ARE 28 WORDS HERE - CAN
YOU FIND THEM?

HERE ARE THE WORDS TO LOOK FOR:

ADAMSBROTHER
APPEARANCE
CAPACITY
COLOR
DESIRABILITY
EARLYAMERICAN
FUNCTION
HEPPLEWHITE
PERIODS
QUEENANNE
SIZE
STRENGTH
TRADITIONAL
VERSATILITY

AESTHETIC
BALANCE
CHIPPENDALE
CONTEMPORARY
DUNCANPHYFE
FRENCHPROVINCIAL
HARMONY
LOUISXIV
PRIMITIVE
SHERIDAN
SPANISH
STYLE
USEFULNESS
VICTORIAN

FIND THE WORDS IN THE PUZZLE ABOVE. WORDS MAY BE HORIZONAL, VERTICAL, DIAGONAL, FORWARD, OR BACKWARDS.

NAME____________________________

DESIGNING FURNITURE AND CABINETS #2

```
. . . . . . . . . . . . . . . . . . . . . V . . . . N . . . . .
. . . . . . . . . . . . . . . C . . . . . I . . . . A . . . . .
. . . . . . . . . . . . . . O . . . . . . C . . . . C . . . . .
. . . . . . . . . . . . . N . . . . . . . T . . . . I . . . . .
. . . . . . . . . . . . T . . . . . . . . O . . . . R . . . . .
. . . . . . S . . . . E . . . . . . . . . R . . . . E . . . . .
. . . . . . . T . . M . . . . . . . . . E I E . . . M . . . . .
. . . . . . . . R P . . . . . . . . . C . A V . . . A . . . . .
. . . . . . . F O E . . . . . . . . N . . N I . . . Y . . . . S
. . . . . . . R . . N . . . . . . A . . . . T . . . L . . . D .
. . . . . . A E . . . G . E . . R . . . . . I . . . R . . O . .
. . . . . R . N . . S . T . L A . . . . . . M . . . A . I . . .
. . . . Y . . C . . S . . H E Y . . . H A . I . . . E R . . T .
H A R M O N Y H . . E . . P . . T . . E E . R . . . E . V . R .
. . H S I N A P S . N . P . . . . S S . . P P . . P . . I . A .
. . F C O L O R . . L A . . . . . T . . . . P . . . . C X . D .
. . U . . . . O . . U . . . . . H . . . . . . L . . H . S . I .
. Y N . . . . V . . F . . . . E . . . . . . . . E I . . I . T .
. T C . . . . I . . E . . . T . . . . D . . . . P W . . U . I E
. I T . . . . N . . S . . I . . . . . . U . . P . B H . O . O N
. C I . . . . C . . U V C . . . . . . . . N E . A . . I L . N N
S A O . . . . I . . . . E . . . . . . . . N C L . . . . T . A A
H P N . . . . A D A M S B R O T H E R . D . A A . . . . . E L N
E A . . . . . L . . . . . . S . . . . A . N . . N . . . . . . E
R C . . . . . . . . . . . . . A . . L . C . . . . P . . . . . E
I . . . . . . . . . . . . . . . T E . E . . . . . . H . . . . U
D . . . . . . . . . . . . . . . . I . . . . . . . . . Y . . . Q
A . . . . . . . . . . . . . . . . . L . . . . . . . . . F . . .
N S I Z E . . . . . . . . . . . D E S I R A B I L I T Y . E . .
. . . . . . . . . . . . . . . . . . . . T . . . . . . . . . . .
. . . . . . . . . . . . . . . . . . . . . Y . . . . . . . . . .
. . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . .
```

FURNITURE CONSTRUCTION TECHNIQUES TERMS #1

```
Y D A E H K Q S S B U K B B V S Z B C M N Y D H X U W X J R Z O
B P J N Q I O T P A Y X Q E O F Q T R E N Z T F V Q D C P T M G
U V L W I Y O X V Y V S D X Y P N J E N E R E T I M A N K I R J
T G J J V B Q W R C L G F B T S J P L T X P A N E L D R D O W N
T V P E B X U O X V E B R G U Z J A I X J J Q M J K U D O K O V
K A O Q U O Q J W - B S M A S D O L A W K M P P I A L V D N J B
V D K C O G Q G E J F Q T E Z U J - T E C S U C Q E E M E C M K
D D A E F Q T N T Y H N A O S W Z D E X K X B L L W E T V N N R
D R C D Q H D T O N B O J H L S Z N V W F R O A V R J D M P V M
C E A H O V Z K E F W B Y H B S A E O F F D P S F B H Z E A B Z
L Q Y W E H Q L S H C E K D I M H L D L P N H C F S S A C R A C
E I G E E S K M W X D L H Z W J Z M A N T E O I X U Y P C O Y K
A V W X K R T O P E N S S B C P U X Y I E D G E - F A C E T E F
T O Z B L H U U N X F H T N U P H Z Z B R L D P S X G E D D S R
S A O E Y X F G F Q V E A U M H S R J C P T P N I U V J I R E A
R Q L S G W J U F O E C N F U Q B M A Z G T X V T E D U C A V M
H S U L F E D D L H E N D - E N D S F A C E - F A C E B E B L E
G G E H V J I A O U C S A Z W L E M E Y C G Z Q Q R L P O B E E
Q N O D L D I G Q S Y G R F T W W S P B B F J W Y I M C B E H I
C E S Q Q E A D E A K I D Z O E I D A Q S E F Y N J F O R T S C
E N D - F A C E E S Y X S R E T D F L G Y J Z D C Z C R A C S W
S N I P M H J G P G O F K L R W J C N H B V C U Y U M N C B C Q
L M G F I Q J N V Y D S Q O X S Q T I N W T U P Z F B E K N N L
C K P X Z K C N X M J E M N E K Q U C L A V R R P A D R E S I C
B B O T M T Q S E U K S - F N Z M L S M G Q U Q T Y M L T P T Z
O T A X Q D F H D I A J Q E C I A B B V S K D K Y Q F A S Z M L
B R V U J C L K T U J I S V G Q F O X D G S B T M J Z P I V J P
V S D D O D P I F Y D K V R B D U O F B W Q K V C J Z X G A D Y
Q K U A H U M B K W J W T E Z R E L I A R D N A G E L S D C O H
Q K P K Z G Z G L P J C H F Z K R B C P E O D G E E C I Y Q D Q
Q S R O V A X H O H H L R X U Q Y M B S K M P C Q T V V F A W C
L E A X Z W Y G J U C B D R D P B O I T A F A P Z Z S T C W C J
```

THERE ARE 38 WORDS HERE - CAN YOU FIND THEM?

FIND THE WORDS IN THE PUZZLE ABOVE. WORDS MAY BE HORIZONAL, VERTICAL, DIAGONAL, FORWARD, OR BACKWARDS.

HERE ARE THE WORDS TO LOOK FOR:

BLIND
BUTT
CASEWORK
CLEATS
DADO
DRAWER
EDGE-END
END-END
END-LAP
FLUSH
GROOVE
LAP
LIP
MITER
OPEN
PINS
SHELVES
STANDARDS
TENON

BRACKETS
CARCASS
CHEST
CORNERLAP
DOVETAIL
EDGE-EDGE
EDGE-FACE
END-FACE
FACE-FACE
FRAME
KEYED
LEGANDRAIL
MIDDLELAP
MORTISE
PANEL
RABBET
SLOTS
TAMBOUR
TRIALASSEMBLY

FURNITURE CONSTRUCTION TECHNIQUES TERMS #1

```
. . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . .
B . . . . . . . . . . . . E . . . . . . . . . . . . . . . . M G
U . . . . . . . . Y . . D . . . . . . . . R E T I M . . . I R .
T . . . . . . . . . L G . . . . . P L . . P A N E L . . D O . N
T . . . . . . . . . E B . . . . . A I . . . . . . . . D O . O .
. . . . . . . . . - . S M . . . . L A . . . . . . . L V . N . .
. D . . . . . . E . . . T E . . . - T . . . . . . E E . E . . .
D . A . . . . N . . . . . O S . . D E . . . . . L . . T . . . .
D F C D . . D . . . . . . . L S . N V . . . . A . . . . . . . .
C E A H O . . . . . . . . . . S A E O . . . P . . . . . . . . .
L . Y W E . . . . . . . . . . . . L D . . . . . . S S A C R A C
E . . E E S . . . . . . . . . . . . A . . . . . . . . . . . . .
A . . . K R T O P E N . S . . . . . . I E D G E - F A C E . . F
T . . . . . . . . . . . T . . . . . . . R . . . . . . . . . S R
S . . . . . . . . . . . A . . . . . . C . T . . . . . . . R E A
. . . . . . . . . . . . N . . . . . A . . . . . . . . . . A V M
H S U L F . . . . . E N D - E N D S F A C E - F A C E B . B L E
. . . . . . . . . . . . A . . . E . E . . . . . . . L . . B E .
. . . . . . . . . . . . R . . W . S P . . . . . . I . C B E H .
. . . . . . . . . . . . D . O . I . A . . . . . N . . O R T S .
E N D - F A C E E . . . S R . T . . L . . . . D . . . R A . . .
S N I P . . . . . G . . K . R . . . . . . . . . . . . N C . . .
. . . . . . . . . . D . . O . . . . . . . T . . . . . E K . . L
. . . . . . . . . . . E M . . . . . . . . A . . . . . . R E . I .
. . . . . . . . . . . . - . . . . . . M . . . . . . . L T P . .
. . . . . . . . . . . . . E . . . . B . . . . . . . . A S . . .
. . . . . . . . . . . . . . G . . O . . . . . . . . . P . . . .
. . . . . . . . . . . . . . . D U . . . . . . . . . . . . . . .
. . . . . . . . . . . . . . . R E L I A R D N A G E L . . . . .
. . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . .
. . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . .
. . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . .
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FURNITURE CONSTRUCTION TECHNIQUES #2

```
P F W M D N S C V B N U H A H N P R F K X L N Q V T J T H G M C
D J W X H A D D A I Z Z B Z F S X E N D - E N D Y N W H F N M U
I R V E C J K N H T O G Y O M D F U R M B B M L N D D O T C N W
F O Y O U B O N M J D I R O D L N X T L C X P E C O Z O I F D G
X F M W I Z N J G B O Y V R U E A N R A N U J N D M W V M O Q Y
O H V Q P I M D O I V G P S J Z Y F S K F U F A J S O U J G S R
G P X Q R A I E Z W E R H C G M L E T M Z Q D P E U B Z B L C G
E C H E S T L J J K T O N O N E T I K K A G R K Z N N E U X S X
W C G W J K Q R F L A O N E G V I L J I W J L K M U D T O D C E
G R A X B K H A E N I V S A A J B M S L E A I U G G M F R A F Y
K K B F J M O D P N L E N I C T N T M Y G H T M E O G A S X R Z
A S Q N - T L M W F R D S L N G A A M C L P X - T Z W T C Z K W
D Y K N Q E C T N T R O J J G Z Y M I K L B E E V E O J U Z B F
C N P E D D G Z I A A Y C D W Y Y B T G X D M R R L V P O G X O
F L I I A V I D I K C H A P T M S O E Y G A G E S S A C R A C V
U W E L N X D L E D N E - E G D E U R E Q E B O S J N O K S H L
P Y J A B S G W S F O K X D Q I L R P V W C E S I S G N A D T M
S S Y Z T H V R T S T Q Q K W K X T R S U A W R B X A K H H I G
T F Z Q C S E V M O B Q D L R G N U T P K F Q A I T H L X Q R K
A D F L X P N B X E R L A O H H N P A Y Q - H F K U Z E A B T T
N T T U B L D O C J Y P W O K L M P N S M E X V G Z M Y M I H X
D G T J Y R - P P L A E I S E V L E H S I C I T S B X Q O A R S
A L Y M P W F H L E S O Z R C A Y Q U O P A L E L D D I M P R T
R H H Z S W A V S A N R V P I Z Y Z S Y E F W B G H B W K A K F
D D P R J D C F C U Z B B D U O S F E B S P O B F F R P A L Z L
S I T N M V E P M G U M S O S O D O P K I C C A H F P U L - E O
V U E Y X S N I L V S Q S T E K C A R B T M B R V G Q M L D V D
M Q C S A M Y S U A Q H Q J N S C D I F R Y B I V A S I Q N F O
U Y C Z D W X I N H D P S N H B Z C C T O K R U N R H U I E Q J
D C S N Z U U A R S O C I E O N U Y X K M K C K J T S I L Z N Q
U Q Z G X H D W J E T N V L S Q S F G E B I Q L U E T Y N F S T
T M J Y L E M W X N W W E P E N T F C P V T S V A S G B O C O G
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MITER
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PINS
SHELVES
STANDARDS
TENON
BRACKETS
CARCASS
CHEST
CORNERLAP
DOVETAIL
EDGE-EDGE
EDGE-FACE
END-FACE
FACE-FACE
FRAME
KEYED
LEGANDRAIL
MIDDLELAP
MORTISE
PANEL
RABBET
SLOTS
TAMBOUR
TRIALASSEMBLY

FURNITURE CONSTRUCTION TECHNIQUES #2

```
. . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . .
. . . . . . . . . . . . . . . . . E N D - E N D . . . . . . . .
. . . . . . . . . . . . . . . . F . . . . . . L . . . . . . . .
. . . . . . . . . . D . . . D L . . . . . . . E . O . . . . . .
. . . . . . . . . . O . . . U E . . . . . . . N D . . . . . . .
. . . . P . . . . . V G . S . . Y . . . . . . A . . . . . . . .
. . . . . A . . . . E R H . . . L E . . . . D P . . . . . . . .
E C H E S T L . . . T O N O N E T . K . . . . . . . . E . . . .
. C . . . . . R . . A O . . G . . . . . . . . . . . D . . D . .
. . A . . . . . E . I V . A . . . . . . . . . . . G . . R . . .
. . . F . . . . . N L E N . . . . T . Y . . . . E . . A S . . .
. . . . - . . . . . R D . . . . . A M . L . . - . . W T . . . .
D . . . . E . . . . R O . . . . . M I . . B E . . E O . . . . .
C N P . . . G . . A . . C . . . . B T . . D M . R L . . . . . .
. L I I . . . D I . . . . . . . . O E . G . . E S S A C R A C .
. . E L N . . L E D N E - E G D E U R E . E . . S . . . . . . .
. . . A B S . . . . . . . . . . . R . . . C . . . S . . . . . .
S . . . T . . . . . . . . . . K . . . . . A . . . . A . . . . .
T . . . . S E . . . . . . L R . . . . . . F . . . . . L . . . .
A . . . . . N . . . . . A O . . . . . . . - . . . . . E A . . .
N T T U B . D O . . . P W . . . . . . . . E . . . . . . M I . .
D . . . . . - . P . . E . S E V L E H S . C . T . . . . . A R .
A . . . . . F . . E S . . . . . . . . . P A L E L D D I M P R T
R . . . . . A . . A N . . . . . . . . . E F . B . . . . . A . F
D . . . . . C . C . . . . . . . . . . . S . . B . . . . . L . .
S . . . . . E . . . . . . . . . . . . . I . . A . . . . . - . .
. . . . . . . . . . . . S T E K C A R B T . . R . . . . . D . .
. . . . . . . . . . . . . . . . . . . . R . . . . . . . . N . .
. . . . . . . . . . . P . . . . . . . . O . . . . . . . . E . .
. . . . . . . . . . . . I . . . . . . . M . . . . . . . . . . .
. . . . . . . . . . . . . L . . . . . . . . . . . . . . . . . .
. . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . .
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FASTENERS AND HARDWARE TERMS #1

```
U E X V P D I R H Q Y N T R G G H L G P P L L S U N K C X J R O
F U O N O N T U G V J H Z L U I G E Z Y H S S U G L U C L Q P H
C K M T C B H V Q O D J U J O T F E C T I Q J I X X D J Z P E O
I Y P V T G X Z I K I Q L H W Y J K M U L S G D W R E T I T W A
R U A E I I C C B A B K U J K W H C V N L U S N A I L S E T C C
O V A L H E A D O A U Y Y Q W P H L O K I S L G S E K I O Y C O
K B I L J X V Y H K C Z Q N F V M I D E P S Y I G F H K R E W A
B V W K W I Q P V V D G H S A Q D G E H S E J H D E R T Q L A G
A Q S V O A M R L O A A X U T B B G B L S C D X L S J P A S O M
G S C O R Z C P O I N P P T H A X H I D C E S Q E B U H S L V I
C V R M I E U K A D A T F G R E N A U M R R P I S R J P C C F R
D E V A R W T W L B G N V V G A N D A W E E G J Q Y S N P U J O
Z Q K W G O Y E T T Y J P A E X X G A W W R E K M Q R N A O D B
R R D C O M M O N N A I L M E V N B K R F A G J V H X F V E R C
E C R N O E H C T U C S E L A E R P B L D U N Y A X T X Z L V T
A Z A U G S H H X S G Z P G T L E G T K Y Q I L A Z Y S U S A N
W X W U H L F O Y P C U X I E P C F C Q Y S H K Y R T Q M K R B
Q X E L V A L N H B D L C Y G M O F D L Y X O J G J L X M N L A
P W R W G B H K U G I C Y D N L K B S U R M N S I L G P I I Y H
O U G O F O W T V A A I D K I Y S D Z Z H F A W D N J F M S I X
P D U U S T T A N T R C O T H I K X A Y T Y I Y E F R P J R I T
Y Q I Z O H I X C T L G N X T E K C A R B R P A C P J O D E I P
X V D T I J O K L J O W N L O W H B V G H X T K O D R P F T C A
H Y E N V B V I Y J H K H H V W S A D C T A X I R L N A B N F H
X D G H X H V K D C O E B W I L C Z J I S H S O A L I O H U R U
S E B W P M R A J J F O E Z P I P N M V E U D P T U C I K O Q Y
F O U L O R R O C B X J D M Z Y Z M I X U E E E I P H K H C I S
M Z T W V B J U L H B M N T C L P W P Z E J M L V W C J J H W Q
R O U N D H E A D L S O S C F T U N E E T G B I E O W Y S M O D
K G R G U Y W O J X E F V F E W A V M B N O K A L M E F M L X M
S K I W P P K K O A I R O R F H H K Y S N P I B K B T Y K N X G
P Z Q V T O U T O E R D S H A K E O M K R A M M R J J K C S L A
```

THERE ARE 32 WORDS HERE - CAN YOU FIND THEM?

FIND THE WORDS IN THE PUZZLE ABOVE. WORDS MAY BE HORIZONAL, VERTICAL, DIAGONAL, FORWARD, OR BACKWARDS.

HERE ARE THE WORDS TO LOOK FOR:

BAIL
BOXNAIL
BRACKET
BRAD
BUTTHINGE
CLAMPNAIL
COMMONNAIL
COUNTERSINK
DECORATIVE
DRAWERGUIDE
DUPLEXNAIL
ESCUTCHEON
FLATHEAD
HANDLE
HARP
HASP
KNOB
LAZYSUSAN
LIDSUPPORT
LOCK
MAGNETICCATCH
NAILSET
OVALHEAD
PHILLIPSSCREW
PIANOHINGE
PIVOTHINGE
PULL
ROLLERS
ROUNDHEAD
SQUARERECESS
STANDARD
TEENUT

FASTENERS AND HARDWARE TERMS # 1

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. . . . . . . . . . . . . . . . . . . . P . . . . . . . . . . .
. . . . . . . . . . . . . . . . . . . . H . . . . . . . . . . .
. . . . . . . . . . . . . . . . . . . . I . . . . . . . . . . .
. . . . . . . . . . . . . . . . . . . . L . . D . . . . . . . .
. . . . . . . . . . . . . . . . . . . . L . . N A I L S E T . .
O V A L H E A D . . . . . . . . . . . . I S L . . E . . . . . .
. . . . . . . . . . . . . . . . . . . . P S . I . . H . . . . .
. . . . . . . . . . . . H S . . . . . . S E . . D . . T . . . .
. . . . . . . . L . . A . . T . . . . L S C . . . S . . A . . .
. . . . . . . . . I N . . . . A . . I . C E . . . . U . . L . .
. . . . . . . . . D A . . . . . N A . M R R . . . . . P . . F .
. . . . . . . . L . . N . . . . N D A . E E . . . . . . P . . .
. . . . . . . E . . . . P . . X . G A . W R E . . . . . . O . .
. . D C O M M O N N A I L M E . N . . R . A G . . . . . . . R .
. . R N O E H C T U C S E L A E . . . . D U N . . . . . . . . T
. . A . . . . . . . . . P . T L . . . . . Q I L A Z Y S U S A N
. . W . . . . . . . . U . I E . C . . . . S H . . . . . . K . .
. . E . . . . . . B D L C . G . . . . . . . O . . . . . . N . .
. . R . . . . . U . I C . . N . . . . . . . N . . . . . . I . .
. . G . . . . T . A A . . . I . . . . . . . A . D . . . . S . .
. . U . . . T . N T . . . . H . . . . . . . I . E . . . . R . .
. . I . . H . X C . . . . . T E K C A R B . P . C P . . . E . .
. . D . I . O H . . . . . . O . . . . . H . . . O . R . . T . .
. . E N . B . . . . . . . . V . . . . . . A . . R L . A . N . .
. . G . . . . . D . . . . . I . . . . . . . S . A L . . H U . .
. E . . . . R A . . . . . . P . . . . . . . . P T U . . . O . .
. . . . . . R O . . . . . . . . . . . . . . . . I P . K . C . .
. . . . . B . . L . . . . . . . . . . . . . . L V . C . . . . .
R O U N D H E A D L . . . . . T U N E E T . B I E O . . . . . .
. . . . . . . . . . E . . . . . . . . . . O . A L . . . . . . .
. . . . . . . . . . . R . . . . . . . . N . . B . . . . . . . .
. . . . . . . . . . . . S . . . . . . K . . . . . . . . . . . .
```

FASTENERS AND HARDWARE TERMS #2

```
H Q G A K Z T E V G O O H N U E F T D K Q V Q L B K Y Y G M V F
N O E H C T U C S E I A U J L I Y F R W D W X Z L S N L A H Z Y
D A T O S T G D V V N P S X Y S T B I G N Z W T S N I P E V K L
S H N I T Y W O O N V M K P R K V L A W Q J C K B A E W I L O J
X M O W C E N O B N X N A A Z X J J O J X S P H W C S W S D J L
Y N D K Y I J U D Q I Y P G B P D P Y D V X T Z Y J S E R P S L
U N C I F K G G E S Q I U T N P D O O S K F J A W Y Q F E K X B
H M N U F L P U R D M P A Q R E Q J E G N I H O N A I P L A L K
A A R P H F I E R A I P Q A K Q T A O E T I E Q E D P X L B Y C
B C R H I O T A Y G V K H I F Q B I V S I C B T D S A W O K D U
W O J E K N V E N J F A K D U J H P C V D U K W I E M R R X Q R
S C F D U B R A D X S H D L X X U G Z C T T U T U G B S D G E D
S I P O G I Q Y M P E U D L G T E L S T A L O F G N I L O G S W
E G C B E C D S M L E L K W T T N J H Q W T N J R I H L R N D N
C H A R P E R J N Q R I P E V T W I F B Y Q C D E H B U P O E B
E R O U N D H E A D T D A U Z K N V N W Q I G H W T L P D B C T
R G Y O R U V V H E D T L F D G B X K V U I B J A O I X U E O D
E O S V O S U X K K Z D L A E Z K W J O L Z I Y R V A O M C R V
R C D T O K M C N H I P Q V Z F H A N D L E Q B D I N V D O A F
A Q A W Y B A Y G V Q D I J G Y H Q B T E H C A G P N A S H T L
U N X O U R L Y T D Y Y Z L R G S H B Z R F Z Q R E O L P M I L
Q T Q T B L Z M Z L G K W D J T O U V N U O E H W Z M H O L V D
S L I R I A P Z I F I N H O P I O V S T L J P H J W M E I H E G
T Z I M L B Y A F F B X I S R V H R C A H L F P A A O A V F X T
Z I T A C I N B I J J N I D L U P O P F N B T X U D C D F V W P
M H N A N X A R S T X I J N A V J U G Z Z X W U P S N N R I I G
R Q S D O P X B V V O G B J E E Z I P J Z E S U N H D C X Z R G
R N E B C C M M A L V X W R F V H X H B M A K M H E Z I Z V S A
X H B O N I C A O K W F G M Q Q G T G V D O V I A W E B L G E F
A D O O J F R X L C I K T S O D C X A E U L X G T D K T I T H E
T T B O N K C O L C D J R Y J F N A I L S E T G B F G P T D J M
R F Y T P H I L L I P S S C R E W P I F F Q Z S Z J Y H J I H M
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STANDARD
BOXNAIL
BRAD
CLAMPNAIL
COUNTERSINK
DRAWERGUIDE
ESCUTCHEON
HANDLE
HASP
LAZYSUSAN
LOCK
NAILSET
PHILLIPSSCREW
PIVOTHINGE
ROLLERS
SQUARERECESS
TEENUT

245

FASTENERS AND HARDWARE TERMS #2

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. . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . .
N O E H C T U C S E . . . . . . . . . . . . . . . . . . . . . .
. . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . .
. . . . . . . . . . . M K . . . . . . . . . . . . . . . . . . .
. . . . . . . . . . . N A . . . . . . . . S . . . . . . S . . .
. . . . . . . . . . I . . G . . . . . . . . T . . . . . R . . .
. . . . . . . . . S . . . . N . . . . . . . . A . . . . E . . .
. . . . . L . . R . . . . . . E . . E G N I H O N A I P L . . .
. . . . . . I E . . . . . . . . T . . . . . . . E D . . L . . .
. . . . . . T A . . . . H . . . . I . . . . B . D . A . O . . .
. . . . . N . . N . . A . . . . . . C . . U . . I E . R R . . .
S . . . U B R A D X S . . . . . . . . C T . . . U G . . D . . .
S . . O . . . . . P E . . . . . . . . T A . . . G N . L . . . .
E . C . . . . . . . . L . . . . . . H . . T . . R I . L . . D .
C H A R P . . . . . . . P . . . . I . . . . C . E H . U . . E .
E R O U N D H E A D T . . U . . N . . . . . . H W T L P . . C .
R . . . . . . . . E . . L . D G . . . . . . . . A O I . . . O .
E . . . . . . . K . . . . A E . . . . . . . . . R V A O . . R .
R . . . . . . C . . . . . . Z . H A N D L E . . D I N V . . A .
A . . . . . A . . . . . . . . Y . . . T . . . . . P N A . . T .
U . . . . R . . . . . . . . . . S . . . R . . . . . O L . . I .
Q . . . B . . . . L . . . . . . . U . . . O . . . . M H . . V .
S L . . . . . . I . . . . . . . . . S . . . P . . . M E . . E .
. . I . L . . A . . . . . . . . . . . A . . . P . . O A . . . .
. . . A . I N . . . . . . D . . . . . . N . T . U . C D . . . .
. . . . N X A . . . . . . . A . . . . . . . . U . S . . . . . .
. . . . O P . B . . . . . . . E . . . . . . . . N . D . . . . .
. . . B . . M . . . . . . . . . H . . . . . . . . E . I . . . .
. . . . . . . A . . . . . . . . . T . . . . . . . . E . L . . .
. . . . . . . . L . . . . . . . . . A . . . . . . . . T . . . .
. . B O N K C O L C . . . . . . N A I L S E T . . . . . . . . .
. . . . P H I L L I P S S C R E W . . . F . . . . . . . . . . .
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PROJECT PLANNING #1

```
U P F F S C O O J A K V A R Q R P I E F N U S X T Q G B H S E B
V B F M G E F J X V I K X U S Q J W S V D O W E V N M G P W A A
T U A B X O G W C A A G V H S V W P G K X B K M I S D D F E D W
D E N V M R S G Z X X S B L J C J P D D N X X W U V X I J I C D
D T E W E W L T F M E D J X H U T L F O W O A F N S B F U V I E
K M K F E D T P G J B L C W D C J I K O K R I L I W E B H E R W
T E G I D F R E E H A N D E W P N X R G D K U M V E J E G D T I
G O V N V R F N Z E W K S B T X X T C G L M D E E I H U H I E A
N W P I N E A F P X R I W L W G H P N M I W T W R V S L G S M I
H Z N V T K P O R X G Y X T R O J I H G Y K X P S L O T R E O D
M P H O I C J V B N M K H B G Q K B T S U G A Y A I B Y P A S E
Z N W T I E E C H G D M E R N R H J C J N W G Z L A G Z O Q I A
F T I A L S W P F C V H A N O T C I N I B S R H Z T I Q O F Z S
C Y Y H L O N S S V R P E W O R T U H F I W A B F E L O K D F V
V K P A J O R E Z R H B S A A A A C E B A L P B P D R G I C S Y
S P K I A H V S T I E T O H I G T M V Z F H H U Z L W Z E T C P
S S H M C U V B C X G P S R A E R S P N A E P F X L A N I T R Q
B S S S L T M Z X S E K X T K C G L Q V A S A I Y Y T N D Q A S
A W N E W O O D H A U K K S M G Y X Y S C O P L L E N M N S O D
Z E L N N Z S R C M P Z B M O W L V L X D O E L R H S R E I Y I
Z I B E Q T A T I Y V M T B O R O D A E N D R T Q L Y L S N N D
B V W T T X A W U A G E J O I W M Q I L B J J Y M M C G F E J G
A T V P B T W E U Z L E D A S I A W E M B U N Y M R F V J D S O
N N V L S T E P N W C S Y I O L H L N I E X U N I H H Z J D N S
M O A P M M G R P T K K T Y R H P C V T F N V C T J M O S I U J
W R T J M S M K I F L B P E L O W V S I J W S O X E T U D H M P
H F O J V Z E X U N Q N H M A Q D X U E E X B I E D N R V P G D
X S R E D R O B Q Z G C T Y X R L Z H H L L E X O O T I Y R Z I
H U T A L Y S R T W X O S T S L Q T O Z I U E V U N E X B V P D
I R H Q Y N T R G G H L G F L L S U N Q K C X J R O F U Q A N O
N T U G V J H Y R A I L I X U A L U U I G E Z Y S S U G L U C C
L Q P H C K M T C B H V Q O D J U E J O T F E C T Q J I X X D O
```

THERE ARE 32 WORDS HERE - CAN
YOU FIND THEM?

HERE ARE THE WORDS TO LOOK FOR:

ARCS
BOARDFEET
CABINET
CIRCLES
DETAILVIEWS
EXTENSION
FRONTVIEWS
HIDDEN
ISOMETRIC
NEATNESS
OBLIQUE
PERSPECTIVE
PLANNING
SIDEVIEWS
TOPVIEWS
VIEWS

AUXILIARY
BORDER
CENTER
DESIGN
DIMENSION
FREEHAND
GRAPHPAPER
IDEAS
LETTERING
OBJECT
ORTHOGRAPHIC
PICTORIALS
PLYWOOD
SKETCHING
UNIVERSAL
WORKINGDRAWING

FIND THE WORDS IN THE PUZZLE ABOVE. WORDS MAY BE HORIZONTAL, VERTICAL, DIAGONAL, FORWARD, OR BACKWARDS.

NAME______________________________

BEST COPY AVAILABLE

PROJECT PLANNING #1

```
. . . . . . . . . . . . . . . . . . . . . . . . . . G . . S . .
. . . . . . . . . . . . . . . . . . . . . . . . . N . . . W . .
T . . . . . . . . . . . . . . . . . . . . . . . I . . . . E . .
. E . . . . S . . . . . . . . . . . . . . . . W U . . . . I C .
. . E . . W . . . . . . . . . . . . . . . . A . N S . . . V I .
. . . F E . . . . . . . . . D . . . . O . R . . I W . . . E R .
T E . I D F R E E H A N D E . . . . R . D . . . V E . . . . D T .
. O V . . R . . . . . . S . . . . T . G . . . . E I . . . I E .
. . P I . . A . . . . I . . . . H . N . . . . . R V . . . S M I
. . N V T . . O . . G . . . . O . I . . . . . . S L . . . . O D
. . . O I C . . B N . . . . G . K . . . . G . . A I . . . . S E
. . . . I E E . . . . . . R . R . . . . N . G . L A . . . . I A
. . . . . S W P . . . . A . O . . . . I . . R . . T . . . . . S
. . . . . . N S S . . P . W . . . . . H . . . A . . E . . . . . .
. . P . . . . E . R H . . . . . . C . . . . P . P D . . . C S .
. . . I . . . . T I E . . . . . T . . . . . H . . L . . E . C .
. S . . C . . . C X . P . . . E . . P . . . P . . . A N . . R .
. S S . . T . . . . E . . . K . . L . . . . A . . . T N . . A .
. W . E . . O . . . . . . S . . Y . . . . . P . . E . . N S . .
. E L . N . . R . . . . . . O W . . . . . . E . R . . . E I . .
. I . E . T . . I . . . . B O . . D . . . . R . . . . L . N N .
. V . . T . A . . A . . J O . . . . . I . . . . . . . C . . E . G
. T . . . T . E . . L E D . . . . . . M . . . . . R . . . D . .
. N . . . . E . N . C S . . . . . . . . E . . . I . . . . D . .
. O . . . . . R . T . . . . . . . . . . . N . C T . . . . I . .
. R . . . . . . I . . . . . . . . . . . . . S O . E . . . H . .
. F . . . . . . . N . . . . . . . . . . . . B I . . N . . . . .
. . R E D R O B . . G . . . . . . . . . . L . . O . . I . . . .
. . . . . . . . . . . . . . . . . . . . I . . . . N . . B . . .
. . . . . . . . . . . . . . . . . . . Q . . . . . . . . . A . .
. . . . . . . Y R A I L I X U A . . U . . . . . . . . . . . C .
. . . . . . . . . . . . . . . . . E . . . . . . . . . . . . . .
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FIND THE WORDS IN THE PUZZLE ABOVE. WORDS MAY BE HORIZONTAL, VERTICAL, DIAGONAL, FORWARD, OR BACKWARDS.

NAME______________________________

PROJECT PLANNING #2

```
V Z K E F W B Y H B F F D S F B I S O M E T R I C H Z E A B Z Q
H Q L S H C E K D I M H L P N H C F I G K M W X D L H Z W J Z M
N T E O I X U Y P C O Y K V W X S B C F Y R A I L I X U A U X Y
T E O Z B L H U U N X F P H N U P H Z R Z B L D P S X G E D D A
O E Y X F G F Q V E U M H E S R J P P E N I U V J I R Q L S G W
J U F O E C F U Q B M Z G T R X V G T E E D U C E D D L H E G G
W O R K I N G D R A W I N G E S H V R H S J I A O U C S Z W L M
Y C G Z Q Q R P O E Q N Q D L O P D I A G W Q S Y G F T W B B D
F J W Y M I C E S Q Q E A D E A R E K N P I E Z E D Q S E F Y E
J F C I S Y X E D F G Y J Z C Z C T C D C H S I W M H J G P O S
F L W S D J C N H B V C U Y U M B C H T Q L P M V G F I Q J N I
V Y S E Q E X G N I R E T T E L S B Q O I T I A N P W U P Z F G
B N N L C K A P X O Z K C N X M O J N E G V K Q P U O C L V R N
R P A C D S C S B B I O T D M R T Q S E U R E K S E F T N Z M L
S G Q R U H Q T Y M T S O Z D O T A X Q D F A L H D R I A J Q C
I A B I V S I K B D K O N E Y Q F Z M L B R V P A U J C L K T U
J I S C V Q F D X O W D R E G S B T M J Z I V J H S P V S D D O
D P I F O Y D K D Y A V R B T G N I H C T E K S O I R F B W Q K
V C J Z X B G A L E D R Y Q K X U A H U M B K W J W C E T E Z S
D C O H Q K J P P K N Z D G Z G E L P J C H F Z K R B C V P E O
E U Q I L B O E D G E E P F C S I Y D P L A N N I N G Q S I D Q
Q S R O V A X H C O H H I L E R W I D E T A I L V I E W S X N U
Q Y M B S K M F C T Q T C V V E M E F A W C L E A X E Z W Y G U
J U C B D R D P B O I T T A F E T S I A P Z Z S T I C W C J C C
S N Z M X H H J Y U I F O L N Q R A C V P S H A V A C R S A A N
F E S J T V D E M C W L R S T F O H D R E E S T C E V M U B X I
S Q E B R C J W U J E L I C E N T E R U A D N E J E R N I C H X
Q X K K M I K V O P G O A F G U O N A K W O I X N I N N H K G L
R R T E O M W L K C N T L D V L C A D F R L J S P T E D M U E G
A T V V J H D O B P Z S S D S Q S X S F P M U B Y T A J P B O Y
J P F W M D N S C V B N U H A H N P R F K X L N Q V T E J T H G
M C D J W X H A D D A I Z Z B Z F S X Y N W H F N M U I N R V E
```

THERE ARE 32 WORDS HERE - CAN
YOU FIND THEM?

HERE ARE THE WORDS TO LOOK FOR:

ARCS
BOARDFEET
CABINET
CIRCLES
DETAILVIEWS
EXTENSION
FRONTVIEWS
HIDDEN
ISOMETRIC
NEATNESS
OBLIQUE
PERSPECTIVE
PLANNING
SIDEVIEWS
TOPVIEWS
VIEWS

AUXILIARY
BORDER
CENTER
DESIGN
DIMENSION
FREEHAND
GRAPHPAPER
IDEAS
LETTERING
OBJECT
ORTHOGRAPHIC
PICTORIALS
PLYWOOD
SKETCHING
UNIVERSAL
WORKINGDRAWING

FIND THE WORDS IN THE PUZZLE ABOVE. WORDS MAY BE HORIZONTAL VERTICAL, DIAGONAL, FORWARD, OR BACKWARDS.

NAME______________________________

PROJECT PLANNING #2

```
. . . . . . . . . . . . . . . . I S O M E T R I C . . . . . . .
. . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . .
. . . . . . . . . . . . . . . . . . . F Y R A I L I X U A . . .
. . . . . . . . . . . . P . . . . . . R . . . . . . . . . . . .
. . . . . . . . . . . . . E . . . . . E . . . . . . . . . . . .
. . . . . . . . . . . . . . R . . G . E . . . . . . . . . . . .
W O R K I N G D R A W I N G . S . . R H S . . . . . . . . . . .
. . . . . . . . . . . . . . . O P . . A . W . . . . . . . . . D
. . . . . . . . . . . . . . . . R E . N P . E . . . . . . . . E
. . . I . . . . . . . . . . . . . T C D . H . I . . . . . . . S
. . . S D . . . . . . . . . . . . . H T . . P . V . . . . . . I
. . . E . E . G N I R E T T E L . B . O I . . A . P . . . . . G
. . . L . . A . . O . . . . . . O . . . G V . . P . O . . . . N
. . . C . . . S . . I . . D . R . . . . . R E . . E . T . . . .
. . . R . H . . . . . S O . D . . . . . . . A L . . R . . . . .
. . . I . . I . B . . O N E . . . . . . . . . P A . . . . . . .
. . . C . . . D . O W . R E . . . . . . . . . . H S . . . . . .
. . . . O . . . D Y A . . . T G N I H C T E K S . I R . . . . .
. . . . . B . . L E . R . . . X . . . . . . . . . . C E . . . .
. . . . . . J P . . N . D . . . E . . . . . . . . . . . V . . .
E U Q I L B O E . . . . P F . S . . D P L A N N I N G . S I . .
. . . . . . . . C . . . I . E . W I D E T A I L V I E W S . N .
. . . . . . . . . T . . C . . E M E . . . . . . . . E . . . . U
. . . . . . . . . . . . T . . E T S I . . . . . . I . . . . . C
. . . . . . . . . . . . O . N . . . C V . S . . V . . . . . A .
. . . . . . . . . . . . R S . . . . . R E . S T . . . . . B . .
. . . . . . . . . . . . I C E N T E R . A D N E . . . . I . . .
. . . . . . . . . . . O A . . . . . . . . O I . N . . N . . . .
. . . . . . . . . . N . L . . . . . . . R . . S . T E . . . . .
. . . . . . . . . . . . S . . . . . . F . . . . . T A . . . . .
. . . . . . . . . . . . . . . . . . . . . . . . . . . E . . . .
. . . . . . . . . . . . . . . . . . . . . . . . . . . . N . . .
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PORTABLE POWER TOOL TERMS #1

```
Q L A G A Q S V O A M R O A X U P B G B E D X L J P S O M G S C
O R Z C P O P P T H X H D S Q E B H S V Z I C D R I L L V R M I
N A M S T F A R C E U K A S T F G R E U I P I S R J C C R D E V
A R W T W B G V V G A E A W G J Q Y S N S U J O Z Q K W G O Y T
T Y J A E X W K M Q R B X N A D B R R V B K F J V H X F V E C E
C R P B L Y A X T X E Z S T I B L V A Z U T G S H H X S G Z G E
G T K Y W X U H L R F O Y P E C X P F C Q S S Y K Y R T Q M R B
Q X L V A L N H S Y M O F D C R L Y X J G O T J W L X M L A P W
W G B H K G C A Y D L K B S U U N R M S I C A L A G P I Y H O U
O F O W V U W I D K Y S D Z Z H T A F W N J N F S M I X P D U S
T T A R R C O T S R E H S I L O P T L I K X L A R S Y T Y Y Y F
R P U V J I T Y Q Z O I T L S G N X E C R A E J A T O D T I P X
V T E C J L J O W N L W H E B V G X T R U K Y D L U P F E C A H
Y S V V O U Y J H K H H D W S A D C T X S T I N U C B F F H X D
H X H V K D C O S E B A W L C Z J I S H O I S R C F O R A U S B
W P M J J F A O R E L Z I P N M V E U D C I O K R E Q Y S F G O
U L O R C B X D E B J D M Z Y Z M I X U E U E E I I H H I N S M
E T A L P M E T D Z T W V J U H R B M N T T C I C L L P I W P Z
E J M W J J H W N Q S O S C F E R G W E Y S N M O E D T K G R G
U Y W O J X F V A F E W A V V M E B R N K T M C E R A F M S L A
X M S K I W P P S K K O A E I L F O R F E H R H A R K Y S N P C
R A B B E T C U T S I K R B T L F Y K R N X O G P P P Z Q O V C
T O U T O E R D H A K S E O M E U R N A M M U H S R A J J I K E
C S L A N N E P N A I Z F L G W B A O A R U T B E P H C I T J S
Q L N V W I E F V B B U J P Y K L M I M P J E F B B E K I A H S
R T D O I G M Y L O E K N O S C N D S Y A P R E M B R E Q T E O
W L P Z O O K E R N L W Z E U O P V B Y N J B I E P X W D I Y R
D V Q A O P L R Y V T L C T Y R B G H L W K I T V B H D Y M D I
K Z I I X C L A X G S J S X H Q G A K Z T E T V G O O H N I U E
E F T D K Q V Q L B K Y Y G M V F I A U J L S I Y F R W D L W S
X Z L S N L S E D I U G A H Z Y D A T O S T G D V V N P S X Y S
T B I G N Z W T S N I P E V K L S H N I T Y W O O N V P R K V L
```

THERE ARE 32 WORDS HERE - CAN
YOU FIND THEM?

HERE ARE THE WORDS TO LOOK FOR:

ACCESSORIES
BITS
BUFFER
CIRCULARSAW
CRAFTSMAN
CUTTERS
DRILL
GUIDES
INTERNALCUTS
POLISHERS
RELIEFCUTS
ROCKWELL
ROUTERBITS
SAFETY
SIZE
STANLEY

BELTS
BLADES
CAPACITY
COST
CURVES
DADOCUT
EXTERNALCUTS
HPRATING
LIMITATIONS
RABBETCUTS
REVERSIBLE
ROUTER
SABERSAW
SANDERS
SPEED
TEMPLATE

FIND THE WORDS IN THE PUZZLE ABOVE. WORDS MAY BE HORIZONAL, VERTICAL, DIAGIONAL, FORWARD OR BACKWARDS.

NAME____________________________

PORTABLE POWER TOOL TERMS #1

```
. . . . . . . . . . . . . . . . . . . . E . . . . . . . . . . .
. . . . . . . . . . . . . . . . . . . . Z . . D R I L L . . . .
N A M S T F A R C . . . . S . . . . . . I . . . . . . . . . . .
. . . . . . . . . . . E A . . . . . . . S . . . . . . . . . . .
. . . . . . . . . . . B X . . . . . . . . . . . . . . . . . . .
. . . . . . . . . . E . S T I B . . . . . T . . . . . . . . . .
. . . . . . . . . R . . . . E . . . . . . S S . . . . . . . . .
. . . . . . . . S . . . . . C R . . . . . O T . W . . . . . . .
. . . . . . C A . . . . . . . U N . . . . C A . A . . . . . . .
. . . . . U W . . . . . . . . . T A . . . . N . S . . . . . . .
. T . . R . . . S R E H S I L O P T L . . . L . R S . . Y . . .
. . U V . . . . . . . . . . S . . . E C . . E . A T . . T . . .
. . E C . . . . . . . . . E . . . . . R U . Y . L U . . E . . .
. S . . O . . . . . . . D . . . . . . . S T . . U C . . F . . .
. . . . . D . . S . . A . . . . . . . . . . S R C F . . A . . .
. . . . . . A . R . L . . . . . . . . . . . O . R E . . S . G .
. . . . . . . D E B . . . . . . . . . . . U . . I I . . . N . .
E T A L P M E T D . . . . . . . R . . . T . . I C L . . I . . .
. . . . . . . . N . . . . . . E R . . E . . N . . E . T . . . .
. . . . . . . . A . . . . . V . E . R . . T . C . R A . . S . A
. . . . . . . . S . . . . E . L F . . . E . R . A R . . . N . C
R A B B E T C U T S . . R . . L F . . R . . O . P P . . . O . C
. . . . . . . . . . . S . . . E U . N . . . U H S . A . . I . E
. . . . . . . . . . I . . . . W B A . . . . T . . P . C . T . S
. . . . . . . . . B B . . . . K L . . . . . E . . . E . I A . S
. . . . . . . . L . E . . . . C . . . . . . R . . . . E . T . O
. . . . . . . E . . L . . . U O . . . . . . B . . . . . D I Y R
. . . . . . . . . . T . . T . R . . . . . . I . . . . . . M . I
. . . . . . . . . . S . S . . . . . . . . . T . . . . . . I . E
. . . . . . . . . . . . . . . . . . . . . . S . . . . . . L . S
. . . . . . . S E D I U G . . . . . . . . . . . . . . . . . . .
. . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . .
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PORTABLE POWER TOOL TERMS #2

```
K Q A O E T I E Q P X R B Y C B C R H I O Y G V K I F Q B V S I
S C T S W K D U W O J E E K V E J C F K D U J H P V D K W M X Q
T R C F D H D L X X U G Z L T U T B A S G E D I P G I Q Y M U D
U L G T E L S L O F I O S G I S W G B P E C D S M L E K W T T N
C J Q W N J H R N N E N R J N E S Q R I A E V T W T F B Y Q D B
L P O B D A Z K V N O W S Q C I F R G D B C T G Y U O R U V V H
A D T F B X K V U I I B R J X U U C E E R D I O S C V O S U X K
N Z D L Z K W J T O L Z E I Y M R C U T V A C T E O D T O K M N
R H I P Q V F A Q B D O D F Q A W V Y T T B B X Y D Y G V Q D I
E J G H Q B T E H C A G N S H L N A E X S U T B O A G U I D E S
T U L Y T I D Y Y Z L R A G H B C Z F S Z E C Q E D R E P M L T
N Q T L M Z M Z G K W D S J T C O V N U R E H R E T U O R W Z O
I L D I I R I A P Z F I N H E O P I O N E V T L J H C J W I H G
T Z L M B Y F F B X I S R S V H R C A H L L F A A V F U X T Z I
T C B I J J N I L U P O S P F B X L D F B D E E P S V W T P M H
N A R S T X I J N V J O U G Z Z C X W P I N S D R I L L N S R I
I G R Q S D X V V O R S R G B U J E Z I S P J E Z E S S U H C X
T Z R G R N E C C I A E M A T L V X W R R F V X D A H B M A K M
H S Z Z V S A X E B F H B S O N I C O K E S W F F A G M Q Q G G
V D O O V I A S E F W B G E F C A D O O V J T E F R L X C I K T
S O S C D C X R U E U L X G T I D S K I E T T L H E T B T D J R
Y J F R G B S B S T I B F G P R T T D J R Y M R E Z I S F Y T P
I F Q Z E A S Z J Y H J I H M C N A I O C M I C X B U G Q W I V
E N U E W H U D G K P L H U X U A N C T I U W Z G N K A Y F B X
A O Z H T I S N D N Z L I T X L M L I Y G P N D N J D H D G L B
I Z K H N A I I Z T V E K R F A S E X P W N L N O E T Z B O L J
Q Z P G X T L J L B C W T T L R T Y M W G Y E P O E C T D F N H
S W Z D A K Q P I O V K T T H S F R J R F K U G B X V P G B Y E
J U H R A R Z B M I P C Q N C A A U W T Y D A E H K Q S S B U K
B B P V S Z B C M E N O Y D H W R X U W X J R Z O P J N Q I O T
P H A Y X Q O F Q T T R R E N Z C T F V Q R O U T E R B I T S D
C P T V L W I Y O X V V S X Y P N J E N E A N K J G J J V B Q W
```

THERE ARE 32 WORDS HERE - CAN
YOU FIND THEM?

HERE ARE THE WORDS TO LOOK FOR:

ACCESSORIES
BITS
BUFFER
CIRCULARSAW
CRAFTSMAN
CUTTERS
DRILL
GUIDES
INTERNALCUTS
POLISHERS
RELIEFCUTS
ROCKWELL
ROUTERBITS
SAFETY
SIZE
STANLEY

BELTS
BLADES
CAPACITY
COST
CURVES
DADOCUT
EXTERNALCUTS
HPRATING
LIMITATIONS
RABBETCUTS
REVERSIBLE
ROUTER
SABERSAW
SANDERS
SPEED
TEMPLATE

FIND THE WORDS IN THE PUZZLE ABOVE. WORDS MAY BE HORIZONAL, VERTICAL, DIAGONAL, FORWARD, OR BACKWARDS.

NAME______________________________

PORTABLE POWER TOOL TERMS #2

```
. . . . . . . . . . . R . . . . . . . . . . . . . . . . . . . .
S . . . . . . . . . . . E . . . . C . . . . . . . . . . . . . .
T . . . . . . . . . . . . L . . . . A . . . . . . . . . . . . .
U . . . . . . . . . . . S . I . . . . P . . . . . . . . . . . .
C . . . . . . . . . . N . . . E S . . . A . . . . T . . . . . .
L . . . . . . . . . O . S . C . F R . . . C . . . U . . . . . .
A . . . . . . . . I . . R . . U . C E . R . I . . C . . . . . .
N . . . . . . . T . . . E . . . R . U T . A . T E O . . . . . .
R . . . . . . A . . . . D . . . . V . T T . B X Y D . . . . . .
E . . . . . T . . . . . N . . . . A E . S U T B . A G U I D E S
T . . . . I . . . . . . A . . . C . . S . E C . E D . . . . . .
N . . . M . . . . . . . S . . C . . . . R . . R E T U O R . . .
I . . I . . . . . . . . . . E . . . . N E . . . . . C . . . . .
. . L . . . . . . . . . . S . . . . A . L . . . . . . U . . . .
. . . . . . . . . . . . S . . . . L . . B D E E P S . . T . . .
. . . . . . . . . . . O . . . . C . . . I . S D R I L L . S . .
. . . . . . . . . . R S R . . U . . . . S . . E . . S . . . . .
T . . . . . . . . I A E . . T . . . . . R . . . D A . . . . . .
. S . . . . . . E B F . . S . . . . . . E S . . F A . . . . . .
. . O . . . . S E F . . . . . C . . . . V . T E . . L . . . . .
. . S C . . . R U . . . . . . I . S . . E . T L . . . B . . . .
. . . R . . S B S T I B . . . R . T . . R Y . . E Z I S . . . .
. . . . E A . . . . . . . . . C N A . . . . . . . B . . . . . .
. . . E W H . . G . . L . . . U A N . . . . . . . . . . . . . .
. . . . T . S N . . . L . . . L M L . . . . . . . . . . . . . .
. . . . . A I I . . . E . . . A S E . . . . . . . . . . . . . .
. . . . . T L . L . . W . . . R T Y . . . . . . . . . . . . . .
. . . . A . . P . O . K . . . S F . . . . . . . . . . . . . . .
. . . R . . . . M . P C . . . A A . . . . . . . . . . . . . . .
. . P . . . . . . E . O . . . W R . . . . . . . . . . . . . . .
. H . . . . . . . . T R . . . . C . . . . R O U T E R B I T S .
. . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . .
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254

STATIONARY POWER TOOLS #1

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W J K Q F L N E V I L J D I W J L K M U T O C E G R X B K H A N
S A J B M S L E A I U G M A F A F Y K K B J M O D P I C T W N M
F G H T M O G X R Z A S Q N D T L M W F S L N S A C P X T A Z C
Z A K W Y K N Q C T N T J J G O Z Y K L E E V J U Z B F U S E D
D Z C I A Y S D W Y Y G X R V P H O G X D O F A V I K N C R H A
P T M E S Y U A G V U W X D Q B O E J N I O K S H R I L H E P Y
J G W O P S R F O K X D Q I L P E V A W B E S I S S O O G T N A
D T D M S L F Y Z H V R T S T L Q Q K D R W X T A H L U R I S U
W A R B X K A H H I G F Z Q D C W V M O A B Q W D L A G T M N U
D T R P K Q C T A I T H X N Q R A K D F C L X P O E B P X E E R
L S S I H H E R E N P A I E Y Q S H F K U Z B W T T S L E C R J
V Y A C P O R K E L M P P H W R M N S N M X C V G Z M I Y R H X
G A T F R P J Y R D S R P T A E R L A I O H I I S S M B T X Q O
S L R Y E O I U M P N W H A S P A L O Z I N S S R O C A Y R Q U
O H H I Z T L N S W V I S L R A L R V S P I E T R S T O P R O D
Z Y Z S E E Y L G Y W G R H A T A B E W K R K T U D P R J D F M
U Z B B S T D T S F U O S G L F I L E B P P I O W C F F R P A Z
L C K I T N Y M E A E V P M U G D U M L S S O S O A C D O P K C
C C H S H F P S U S W N L E C O A V L U E E Y X S N S I I L V S
Q M R I I B V G A Q T M C L R V R I D R S A F E T Y   D S M Q C
S A M O S D Y S U W A S Q E I H R R Q J N S C D I F Y B N A I V
A S I Q S E R F O U Y C Z D C D W E X I C N H D S N H B Z A B C
C T K R U S L E N R H U I Q J D C N S N O Z U U A R R B S O B C
E O N U Y X G K D K C K J T S I L A Z N V Q U Q Z G E X I H D W
J E T N V S Q U S N F G E B I Q R L L U E E T Y N F T S T T T M
J Y L E M W X N I W A W E P E N E P T F C C P V T S N V A S S G
B O C O G E R P S D O S R T I I S Z D Z U F W B E K I Y N F G S
L F E X Y A W H K F E A O K X Q A B T L T K X P I I O B N D S Q
D X P D B Z C Z S M Y U L P Q Y W G Y O I H Z R M H J E E H R O
C G H Z N R S V S Y D B D X N Y I N C H B T N N C T P T A D L K
J R X F U N B L F U E H D L Q U N T Y R Z E K W Y U U O E H B D
B H H X R Q G T W L C X A N W D G H X C D T H N I V Q J S R Y V
```

THERE ARE 37 WORDS HERE - CAN
YOU FIND THEM?

HERE ARE THE WORDS TO LOOK FOR:

BANDSAW
BITS
CHISEL
COVECUT
DADO
DRILLPRESS
GRINDER
JOINTER
MITERSAW
MORTISER
RADIALARMSAW
RIPPINGFENCE
RULES
SAFETYTESTS
SCROLLSAW
SPINDLE
SURFACER
TENON
VARIETYSAW

BASICCUTS
CARBIDE
CIRCULARSAW
CROSSGUIDE
DADOHEAD
FACEPLATE
HOLLOWCHISEL
LATHE
MORTISE
PLANER
RESAWING
ROUTER
SAFETY
SANDERDISK
SHAPER
STOPROD
TAPER
UNISAW

FIND THE WORDS IN THE PUZZLE ABOVE. WORDS MAY BE HORIZONAL, VERTICAL, DIAGONAL, FORWARD, OR BACKWARDS.

NAME______________________________

STATIONARY POWER TOOLS #1

```
. . . . . . . . . . . . D . . . . . . . . . . . . . . . . . . .
. . . . . . . . . . . . . A . . . . . . . . . . . . . . . W . .
F . . . . . . . . . . . . . D . . . . . . . . . . . . . . A . .
. A . . . . . . . . . . . . . O . . . . E . . . . . . . U S . .
. . C . . . S . . . . . . . . . H . . . D . . . . . . N . R . .
. . . E . . U . . . . . . . . . . E . . I . . . . R I . H E . .
. . . O P . R . . . . . . . . . E . A . B . . . S S O O . T . .
. . D . . L F . . . . . . . . L . . . D R . . . A H L U . I . .
. A . . . . A . . . . . . . D . W . . . A . . W . L A . T M . .
D . R . . . C T . . . . . N . . A . . . C . . . O E . P . E . .
. S S I . . E R E . . . I E . . S . . . . . . W . . S . E . R .
V . A C P . R . E . . P . H W R M . . N . . C . . . . I . R . .
. A . F R P . . R D S . . T A E R . . . O H . . S . M . T . . .
. . R . E O I U . . N . . A S P A . . . I N S S . O . . . R . .
. . . I . T L N . . . I . L R A L . . S . . E T R S T O P R O D
. . . . E E Y L G . . . R . A T A . E . . R . T U . . . . . . M
. . . . S T . T S F . . . G L . I L . . P . I . W C . . . . . .
. C K . . . Y . E A E . . . U . D . . L . S . . . A C . . . . .
. C H S . . . S . S W N . . C . A . L . E . . . . . S I . . . .
. . R I I . . . A . T . C . R . R I . R S A F E T Y   D S . . .
. . . O S D . . . W . S . E I . R R . . . . . . . . . . N A . .
. . . . S E R . . . . . . . C D . E . . C . . . . . . . . A B .
. . . . . S L E . . . . . . . . . N . . O . . . . . R B . . B .
. . . . . . G . D . . . . . . . . A . . V . . . . . E . I . . .
. . . . . . . U . N . . . . . . R L . . E . . . . . T . . T . .
. . . . . . . . I . A . . . . . E P . . C . . . . . N . . . S .
. . . . . . . . . D . S . . . . S . . . U . . . . . I . . . . .
. . . . . . . . . . E . . . . . A . . . T . . . . . O . . . . .
. . . . . . . . . . . . . . . . W . . . . . . . . . J . . . . .
. . . . . . . . . . . . . . . . I . . . . . . . . . . . . . . .
. . . . . . . . . . . . . . . . N . . . . . . . . . . . . . . .
. . . . . . . . . . . . . . . . G . . . . . . . . . . . . . . .
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STATIONARY POWER TOOLS #2

```
B V O S U Y X O O O W J B Q D P A U F S R L S K U W R C I J Y F
R M Q A T R J G A O Z A Z A A V I V C Q V M C K O R G H T W U H
A K N I U D Z S R N W R K B N J R G T M N R C A E O E M R P C I
T C D F D A J F N U I G K O N G X R O J V T H T D U O H U N G R
Y A U E W Z Z R P C T J S A T T O Q L O R Q N R X R G M U O K Z
M A P O S U R F A C E R Y L I C F E E A V I J W T S R Y S V A P
U C G N V T Y T B E D Z F B D G D T D X O R J I Z H U E W R F W
S U D J F D O E E W Z R N Q O I I I M J Z B S T D A O F T B O X
E G S R B S R S Z B M L F T U J A Z X L Q E W X A P U R B U N O
W P B Q B F F N D K H O Z G T L G U D J R W K C D E G P S I O U
D B W R R R S D J S X B S N A Y P V G T U F D Y O R A R K D T R
C Z N A T F Z G D K A S G R M I T E R S A W N D H V V L R Y C S
O I T E U E R J X D O F M P R V J M M J Z M N J E P E I E U C D
Z W R V V R W Q G R V S E C S D E C U D J Z Z V A K L C S S P X
C J U X E H C S C N A G O T S C R O L L S A W M D L N A U C S S
M X N P T H V I G W E Z H C Y S E L U R U W W I P E X E N T K S
O W A S Y T E I R A V U A G Y T E V N A U T A R F U O P V E R M
I T D A A J M D O C D B S A N D E R D I S K E G X N J C S E R G
Y W A M L F Q M W X U E S Q J R W S T S Z S N U T I Z P U Z B W
O M C F W Q E B U R F L T P K W B J T B S I F J K S Y H B U T Q
V E K W Q Q F T O Q V V A Y N L H T L S P A J K N A W L H N Y J
E R Y G D Z Y L Y P Q R L R E T M B T P L F M W J W V R T N Q L
R E S A W I N G I   D J B L S X C G I U A R O G O L N L C W D E
W E S C C Y X M K J V N D S F A F R W D X X Y V W Z A Y J O Y X
Z H Z L S X Q O V G T N Y V N A W C A X W Q Q O Z S V J U N Q J
O T K S A B C R V J I T Y O C C G D L E S I H C W O L L O H E L
R A M N O A V T Q P C Q N E Z V O Z J B D B G N H S M P V U G C
X L Q F N K G I S X U E P E D I B R A C M H Y E F K V Q D X L X
U S T U C C I S A B T L G X O Z V Z W B G P Y D W R I O C C U M
D E S S Z S W E L E A P Z Q P I L Y S J B N J L S Y X G K Z P T
S G Q G V U P A R T F R R E D N I R G L E S I H C U T A Z V K D
F Q G U Z E K M E D W A A Z E S X B A N D S A W S T O P R O D U
```

THERE ARE 37 WORDS HERE - CAN
YOU FIND THEM?

HERE ARE THE WORDS TO LOOK FOR:

BANDSAW
BITS
CHISEL
COVECUT
DADO
DRILLPRESS
GRINDER
JOINTER
MITERSAW
MORTISER
RADIALARMSAW
RIPPINGFENCE
RULES
SAFETYTESTS
SCROLLSAW
SPINDLE
SURFACER
TENON
VARIETYSAW

BASICCUTS
CARBIDE
CIRCULARSAW
CROSSGUIDE
DADOHEAD
FACEPLATE
HOLLOWCHISEL
LATHE
MORTISE
PLANER
RESAWING
ROUTER
SAFETY
SANDERDISK
SHAPER
STOPROD
TAPER
UNISAW

FIND THE WORDS IN THE PUZZLE ABOVE. WORDS MAY BE HORIZONTAL, VERTICAL, DIAGONAL, FORWARD, OR BACKWARDS.

NAME______________________________

STATIONARY POWER TOOLS #2

```
. . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . .
. . . . . . . . . . . . . . . . . . . . . . . . . R . . . . . .
. . . . . . . . . . . . . . . . . . . . . . . . E . . M . . . .
. . . . . . . . . . . . . . . . . . . . . . . T . . O . . . . .
. . . . . . . . . . . . . . . . . . . . R . N . . R . . . . . .
. . . . S U R F A C E R . . . . . E . A . I . . T S R . . . . .
. . . . . . . . . . . . . . . . D . D . O . . I . H . E . . . .
. . . . . . . . . . . . . . . I . I . J . . S . D A . . T . . .
. . . . . . . . . . . . . . U . A . . . . E . . A P . . B U . .
. . . . . . . . . . . . . G . L . . . . R . . C D E . . . I O .
. . . . . . . . . S . . S . A . . . . . . . . . O R . . . D T R
. . . . . . . . . . A S . R M I T E R S A W . . H V . . R . . S
. . . . . . . . . . O F M . . . . . . . . . . . E P E I E . . .
. . . . . R . . . R . S E . . . . . . . . . . . A . L C . . . .
. . . . E . C . C . A . . T S C R O L L S A W . D L N A U . . .
. . . P . . . I . W . . . . Y S E L U R . . . . P E . . N T . .
. W A S Y T E I R A V . . . . T . . . . . . . R F U . . . E . .
. T . . A . . . . C . . S A N D E R D I S K E G . N . . . . R .
. . . . . F . . . . U . . . . . . S . . . S N . . I . . . . . .
. . . . . . E . . . . L . . . . . . T . S I . . . S . . . . . .
. . . . . . . T . . . . A . . . . . . S P . . . . A . . . . . .
. . . . . . . . Y . . . . R E . . . . P . . . . . W . . . . . .
R E S A W I N G .   . . . L S . . . I . . . . . . . . . . . . .
. E . . . . . M . . . . D . . A F R . D . . . . . . . . . . . .
. H . . . . . O . . . N . . N A W . A . . . . . . . . . . . . .
. T . . . . . R . . I . . O C . . D L E S I H C W O L L O H . .
. A . . . . . T . P . . N E . . O . . . . . . . . . . . . . . .
. L . . . . . I S . . E P E D I B R A C . . . . . . . . . . . .
. S T U C C I S A B T L . . . . . . . . . . . . . . . . . . . .
. . . . . . . E . . A . . . . . . . . . . . . . . . . . . . . .
. . . . . . . . . T . . R E D N I R G L E S I H C . . . . . . .
. . . . . . . . E . . . . . . . . . B A N D S A W S T O P R O D .
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N T X Y B B Q W H W G X X R W S N Q B X K S I Z M F E C T W R V
H B U E Y M N Z M J D V Q K Y T E I N M O Y Y T C G Z Z T I S V
J F Q S P T W T I C E M E N T Z V A A N C D B N D T W M S N L E
Q Y A J R U A X N Z P A D E W O F M N R O F R P T Y P K E L S I
U H E H J L Y B A M L F S P U R V B N Z E H S C S H F T L Q P H
Q P Y C D T U F A I U W M P V L E P T U L M Y Z S A E Y Y A E B
T Y L J E O L L P H R A T K E Y G M E Z H M J O V U N T V G R N
P V H T R I C H S U L E M Y N Z N A M D N Q O W Q I C V I Z V X
Y I G N T G A D Q C G N R O E H B L A B I D G D V G I T N C M S
M C K C N T V A R A D H S P E I L C R B W H L Y E W T F I M M S
C N H I I O N E H A N D S C R E W E Q A C V L T S A S B A P M N
H Y R C P L T N T G Y G W K Y U T P U R Z O I I N T A E R O D W
Q P X O Y I D N U O L M E J H F K I E C P H J T P E L Y G I H Z
S E S O M U E G K O A H B R Z E H P T L W N K R U R P G E D L A
E E D P P T C P Q V K K C W F L X T R A V H B P Q R T F S R Y U
I D X N I E I U B F K D L H B B I E Y M B P J V S E A G R O O M
O U S U U O L U D E E R A H O A X J I P P S T B Z S X L E C B H
R O T A R Y S L I C E D M Q A T G N I W A S E R T I S P V N Y B
S S E R P F T E C M Y O P T Z E G A E A L N Y D K S A M E V X O
H E G D E R A G R E T D K C R G U L M M D T R I F T P A R E E E
Z E B O N D L W G A N V O A E E F J U I L Y N P R A S L A F M A
L J A B N L F B K W U D I T S V F I N E M L W Y A N I C A L K G
M W E R N I E S A C V Q T N O G M G L X A K A I M T D C L L F P
R A V S T Y M K A O Q I S O R R K E E Y I C W F E S E T K U N V
E A E V I S E H D A F M M C C C G Q T B K O E H C K E R F I N G
B Y Z O L J I A S T M H H Z I O J A P I U L U B L E M I C Q C K
I X Z T H V G D H X A J L V N T O Y N W K B J Y A M N O I H N X
N W G J Z D E G E G E Q A L O N K A S I W E T V M V U K C A Q M
D X L B N J I W T E T Y I E L Y V C J D C U E U P P B O I E H K
S L D G R T B S N Y S U T M K C C V J W D L Z Z J P P H V W F A
F S V E K G W X B X F G N I T A N I M A L G K Z I A A E O P P H
X F V F O N L L O D U L G V F G Y S A X C W J E E M R M T Z E V
```

THERE ARE 49 WORDS HERE - CAN
YOU FIND THEM?

HERE ARE THE WORDS TO LOOK FOR:

ADHESIVE
BARCLAMP
BOND
CCLAMP
CONTACT
END
FACE
FLATSLICED
FRAMECLAMP
GLUEBLOCK
HEARTSIDE
HOTGLUE
KERFING
MARQUETRY
ORGANIC
PLASTIC
PRESS
RESIN
REVERSEGRAIN
SAPSIDE
SQUARE
SYNTHETIC
VEGETABLE
WATERRESISTANT
WHITE

ALIPHATIC
BENDING
CASEIN
CEMENT
EDGE
EPOXY
FASTDRY
FLITCH
GLUE
HANDSCREW
HIDE
INLAY
LAMINATING
MITERCLAMP
PIPECLAMP
POLYVINYL
RESAWING
RESORCINOL
ROTARYSLICED
SPRINGCLAMP
STEAM
TIGHTFIT
VENEER
WEBCLAMP

MATERIAL PROCESSING #1

FIND THE WORDS IN THE PUZZLE ABOVE. WORDS MAY BE HORIZONTAL VERTICAL, DIAGONAL, FORWARD, OR BACKWARDS.

NAME______________________________

BEST COPY AVAILABLE

MATERIAL PROCESSING #1

```
. . . . . . . . . . . . . . . . . . . . . S . . . . . . . . . .
. . . . . . . . . . . . . . . . . . . . . . Y . . . . . . . . .
. . . . . . . . . C E M E N T . . . . . . . . N . . . . . . . .
. . . . . . . . . . P A . E . . . . . . . . . . T . . . . . . .
. . . . . . . . . M L . . P U . . . . . . . . . . H . . L . . .
. . . . . . . F A I . . M . V L . P . . . . . . . . E Y . . . .
. . . . . . L L P . . A . . E . G M E . . . . . . . N T . . . .
. . . . . I C H . . L . . . N . . A M D . . . . . I C . I . . .
. . . . T G A . . C . . . . E . . L A . I . . . V . I . N C . .
. . . C N T . . R . . . . . E . . C R B . H . Y E W T . I . . .
. . H I I . . E H A N D S C R E W E Q A . . L T . A S . A . . .
. Y R C . . T . . . . . W . . . . P U R . O I . . T A . R . . .
. P X . . I D . . . . . E . . . . I E C P H . . . E L . G . . .
S . . O M . E . . . . . B . . E . P T L W . . . . R P . E . . .
. . . . P . C . . . . . C . . L . . R A . . . . . R . F S . . .
. . . . . E I . . . . . L H . B . . Y M . . . . . E A . R . . .
. . . . . . L . . . . . A . D A . . . P . . . B . S . . E . . .
R O T A R Y S L I C E D M . . T G N I W A S E R T I S P V . . .
S S E R P . T E . . . . P T . E G . . . . N . D . S A M E . . .
H E G D E . A . R E . . . C R G . L . . D . R I F T P A R . . .
. E B O N D L . . A N . . A E E . . U I . Y N . R A S L . F . .
. . A . . . F . . . U D . T S V . . N E . L . . A N I C A . . .
. . . R N I E S A C . Q T N O . . G . . A K . . M T D C . . . .
R . . . T . . . . . . I S O R R . . . Y . C . . E . E . . . . .
E . E V I S E H D A F . . C C . G . . . . O . . C K E R F I N G
S . . . . . I . . T M . . . I . . A . . . L . . L . . . . . . .
I . . . . . . D H . A . . . N . . . N . . B . . A . . . . . . .
N . . . . . . G E . E . . . O . . . . I . E . . M . . . . . . .
. . . . . . I . . . T . . . L . . . . . C U . . P . . . . . . .
. . . . . T . . . . S . . . . . . . . . . L . . . . . . . . . .
. . . . . . . . . . . G N I T A N I M A L G . . . . . . . . . .
. . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . .
```

260

MATERIAL PROCESSING #2

```
O A D U W B Y I Q G J F M B F N A K N H A C J L J F W V K Y Q Y
I W Y I C V B X Z X Z M E T H J Z G I R S C F U V X F W K P Z B
X Y Q E I L D R O J T M D E R Q M J L K S O W B X D S E P L X A
Y P U R M U U Q N S A X R V A F V O B O O E Z Z H R X Z N K J H
A G M W J D U J L D H E Z B H E F J R P L K L X T C N D Y D B T
B P I A U E Q Z W D X O M I N M J T M G J S H B U I A I S C V W
E F Z H L J O I N N P S B E S B C A L D A Q X Q L C Q D Q I W E
C U F H O C W C U R S C E N G P L A Y L J N X R W F E Y B T E K
E R L V S L R D I E C R F C I C H O R B N I I A Y C C U E E S Q
L M R G S T Y A R Z K L M S E A V H E J I U A C I R H Q D H H B
K O F K Z N M P B T X R I P H T R N O K P I S L V E D J G T G D
B P L V E M V A Z L V I I J T I D G H T Y D S D S S W P E N I X
E M A O L N Z P W Y C P U C F I C L E A G Y W P Q I K I Z Y P Y
J N T T A Y R T E U Q R A M N G H A K S R L W I Z N G C I S V L
O S S U A M T Q R F C T J G E Z P W S A R E U X M N V A K M Y S
Y C L F N U G I U R N E T X K E Y X T K M E E E I I K S I X I Q
M F I A D V L C F O H N M F X E D O O J D D V T D V E E L K U U
S A C Y S T U A C F B G O E G P R I L G I K A E U P R I A Q K A
C S E Q C I T S A L P C N O N P P E S S Y N K K R M F N H A I R
M T D I F P R S B P H F W I Y T L M P T I A T F G A I O P F C E
I D T C E E L Z F Q I H T O W B H A A M R X L W Y L N Y R E N G
O R K X W M L T R P I N J X A A S I A L V A M N H C G A C V Q K
R Y T N A T S I S E R R E T A W S L D N C I E M I B M A V A C T
W E M A E T S L U P A F E Q K O H E T E T C U H I E F S L O I O
N Q V P Q R Y X S H O G L S Z M M C R E O M X B C W W I L F R V
L O N I C R O S E R E L E I G D S P R I N G C L A M P E T O Y P
W R G S S J Z N J V I Q Y N T X Z C J I E H A M P H E H L V F J
W H E J Q E U S T N E O A V D C L E B C W M X P A U G B Z F Y T
J W I E U S H E P O X Y M I I A H V K G P D H T L I H F G Q M B
I A T T S M J D N O B L T T M N X Y T F R T I G T W O C I G I A
B U O I E P L V A S N B C P L Y Y U E R V C T B S I R X W O X Y
C K E R C E Z E N J S E K X H S O L X Z I P M Z F D Z Q R Z I P
```

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YOU FIND THEM?

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ADHESIVE
BARCLAMP
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CCLAMP
CONTACT
END
FACE
FLATSLICED
FRAMECLAMP
GLUEBLOCK
HEARTSIDE
HOTGLUE
KERFING
MARQUETRY
ORGANIC
PLASTIC
PRESS
RESIN
REVERSEGRAIN
SAPSIDE
SQUARE
SYNTHETIC
VEGETABLE
WATERRESISTANT
WHITE

ALIPHATIC
BENDING
CASEIN
CEMENT
EDGE
EPOXY
FASTDRY
FLITCH
GLUE
HANDSCREW
HIDE
INLAY
LAMINATING
MITERCLAMP
PIPECLAMP
POLYVINYL
RESAWING
RESORCINOL
ROTARYSLICED
SPRINGCLAMP
STEAM
TIGHTFIT
VENEER
WEBCLAMP

FIND THE WORDS IN THE PUZZLE ABOVE. WORDS MAY BE HORIZONTAL, VERTICAL, DIAGONAL, FORWARD, OR BACKWARDS.

NAME______________________________

BEST COPY AVAILABLE

MATERIAL PROCESSING #2

```
. . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . .
. . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . .
. . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . .
. P . . . . . . . . . . . . . . V O . . . . . . . . . . . . . .
. . M . . . . . . . . . . . . E . . R P . . . . . . . . . . . .
. . . A . . . . . . . . . . N . . . M G . . . . . . . . . C . .
E . . . L . . . . . . S . E . . . A . . A . . . . . . D . I . .
. U . . . C . . . . S . E N . . L . . . . N . . . . E . . T . .
. . L . . . R . . E . R . . I C . . . B . . I . . C . . E E . .
. . . G . . . A R . . . . . E A . H E . . . . C I R . . D H . .
. . F . . . . P B . . . . P . . R N O . . . . L . E . . G T . .
. . L . . . . . . . . . I . T . D G . T . . S . . S . . E N . .
. . A . . . . . . . . P . C . I . . E . G Y . . . I . . . Y . .
. . T . H Y R T E U Q R A M N . . . . S R L . . . N G C . S . .
. . S . A . . . . . C T . G . . . . . A R . U . . N . A . . . S
. . L . N . . . . . N E . . . E . . T . . E E E I . K S . . . Q
. F I . D . . . . O . . M . . . D O . . . D V T . . E E . . . U
. A C . S . . . C . . G . E . . R I . . I . A E . P R I . . . A
. S E . C I T S A L P . N . N . P E S S Y N . . R M F N . . . R
. T D . R . . . . . . . . I . T L M P T I A . . A I . . . F . E
. D . . E . . . . . . . . . W B H A A M R . L . . L N . R E . .
. R . . W . . . . . . . . . A A S I A L . A M N . C B A C . . K
. Y T N A T S I S E R R E T A W B L D . C I E . I B M A . A C T
. E M A E T S . . P . F E . . . . E . E T C . H . E F . L O I .
. . V . . . . . . . O G L . . . . . R E . . . C W . I L F . . .
L O N I C R O S E R E L E I . . S P R I N G C L A M P B T . . .
W . . . S . . . . V . . Y N T . . C . . . . A . . H E H . . . .
. H . . . E . . . . . . . V D C L . . . . M . . A U G . . . . .
. . I . . . H E P O X Y . . I A H . . . P . . T L I . . . . . .
. . . T . . . D N O B . . . M N . . . . . . I G T . . . . . . .
. . . . E . . . A . . . . P . . Y . . . . C . . . . . . . . . .
. . . . . . . . . . . . . . . . . L . . . . . . . . . . . . . .
```

ADVANCED FINISHING TECHNIQUES TERMS #1

```
U T B E F O E A J S L X K Q M I N E R A L S P I R I T S U G T O
P Y F T L J H H T M C F U Y H R I C N B E I F H A P A C N B T Z
G X R P I P U L F P P Q Z G Z S A K C T K G I G F U I I T H W I
H T A Q I M S Y P Q C E R L K B S L R W T U U O L D S R C U I H
G N I R E T T A P S E Z I A I A O Y A V M D U Q P S V C T D F Q
Z R G I C I T E H T N Y S Z K S Q Q B B M D Y N E I U S O Z T W
W S J Y Q Z H W M Q B O Y E E V B A W C R C I R Y T N D H N K T
L I N S E E D O I L I T E D J T E D Y F V A T U F Y E Y T I Z D
Z T I H Y I M M W U P F G F S L E C O O T S S J A E K V O T A R
Q E R P I E F O N U S R X T T N G Q B S I E H I F E B V L A B F
M N G B F P J P X V A I K S T X U E T D S Q Z N V J W S C S V D
O R W E U T V A M I G L I P N A A I P U S A O I B E X Q K G W C
A A A M N G V Q N H A R S I V W R P G S K I R X S B K M C S D D
F G I I D W D U N C B V A F L I N T O M T E L R G T Z X A X S B
L C A J C J P E Q D D T N X P X V L X C P O E I I J I D T N D T
E P O X Y W E U L T S F M S E D G J U A X H P N O U T R W A X L
F O W O F B E F V R E K M D K I D S P A T P G E A G J B G T L C
W C J I K R B L E A C H E R M K I D L E C B H W N M N G W U T P
N X G K U M J T E G I E O E G N N V F N Z R E W K G E U B R C T
X X C L M D A E H U F T S R H A A N W N N E Y F P X R L T A E R
W L W G P W M I W E T P E T S W S L G H I Z K L P P R A X L F Y
X T R J H G Y K R E X L O T P O T R E M P A H J I O V M I K E H
B Q B T S U A U N Y L B R L R E L A E S Y P T S A C L Z N N D W
T C H G D M S S E I N A H J Y L O O W L E E T S P C J I W Z G Z
O Q F T I S T A F L N B F C V U H N T C I N B S L R H Z S I Q O
F Z C Y E O Y D H S L O R V R E R O R T U F I H W I A B F H L Q
K D F R N V O V P K A J O U R Z B E S A A A A S E B O Y A L B R
G I P E Y O S A P K A H V S S T O H T I G M V I Z F H U G Z W Z
T P S H W M R P I G M E N T U H V B G H S R A N G L O S S U R S
N A E F X E L I T Q B S L M Z X S K X T A C G R Q V A S I Y N Y
D Q S A N N W O D H A U K K M G X Y S C O N C A L L E H S L L N
M Q D T Z N Z S C M P Z B M L V L X D O L H E V S R Y I Z B Q A
```

THERE ARE 49 WORDS HERE - CAN
YOU FIND THEM?

HERE ARE THE WORDS TO LOOK FOR:

ABRASIVE
BLEACH
BRUSH
DEFECT
DISTRESSING
EPOXY
GARNET
GLOSS
LACQUER
MINERALSPIRITS
OILSTAIN
OPENGRAIN
PEG
POLISH
PRESSUREFEED
ROTTENSTONE
SATIN
SEMIGLOSS
SPATTERING
SPRAYGUN
SUCTIONFEED
TACKCLOTH
TUNGOIL
WATERSTAIN
WOODFILLER

ACRYLIC
BRISTLE
CLOSEDGRAIN
DENT
ENAMEL
FLINT
GLAZE
GRITSIZE
LINSEEDOIL
NATURAL
OPAQUE
PAINT
PIGMENT
POLYURETHANE
PUMICE
SANDPAPER
SEALER
SHELLAC
SPIRITSTAIN
STEELWOOL
SYNTHETIC
TRANSPARENT
VARNISH
WAX

FIND THE WORDS IN THE PUZZLE ABOVE. WORDS MAY BE HORIZONAL, VERTICAL, DIAGONAL, FORWARD, OR BACKWARDS.

NAME________________________________

BEST COPY AVAILABLE

ADVANCED FINISHING TECHNIQUES TERMS #1

```
. . . . . . . . . . . . . . M I N E R A L S P I R I T S . G . .
. . . . . . . . . . . . . . . . . . . . . . . . . . . . N . . .
. . . . . . . . . . . . . G . . . . C . . . . . . . . I . . . .
. . . . . . . . . . . . . L . . . L . . . . . . . . S . . . . .
G N I R E T T A P S . . . A . . O . A . . . . . . S . . . . . .
. . . . C I T E H T N Y S Z . S . . . B . . . N E . . . . . . .
. . . . . . . . . . . . . E E . . . . . R . I R . . . D H N . .
L I N S E E D O I L . . . D . . E D . . . A T . . . E . T I . .
. T . . . . . . . . . . G . . L E . . . T S S . . E . . O T . .
. E . . . . . O . . . R . . T N G . . S I E . I F . . . L A . .
. N . . . P . P . . A . . S T . . E T D . . Z N V . . . C S . .
. R . . U T . A . I . L I . N . . I P . S . O I . E . . K . . .
. A . M N . . Q N . A R . I . . R . . S . I R . S . . . C . . .
. G I I . . . U . C B . A F L I N T O . T E L . . T . . A . . .
. C A . . . . E Q . . T . . P . . L . C P O E I . . I . T N . .
E P O X Y . . U . . S . . S . . G . U A . . P N O . . R W A X .
. . . . . . E . . R . . . D . I . S P A . . . E A G . . G T . .
. . . . . R B L E A C H E R M . . D . . C . . . N M N . . U T .
. . . . . . . T . . . E O E . . N . . . . R . . . G E U . R C .
. . . . . . A . . . F T S R . A . . . N . . Y . . . R L T A E .
. . . . . W . . . E T P E . S . . . . . I . . L P . . A . L F .
. . . . . . . . R E . L O T . . . . . . . A . . I O . . I . E .
. . . . . . . U N . L . R L R E L A E S . . T S . C L . . N D .
. . . . . . S S . I . A . . Y L O O W L E E T S P . . I . . . .
. . . . . S T . F . N B . . . U . . . . . . . . L R . . S . . .
. . . . E O . D . S . . R . . . R . . . . . . H . I A . . H . .
. . . R N . O . P . . . . U . . . E . . . . . S . . O Y . . . .
. . P E . O . A . . . . . . S . . . T . . . . I . . . . G . . .
. . . . W . R P I G M E N T . H . . . H . . . N G L O S S U . .
. . . . . E . . . . . . . . . . . . . . A . . R . . . . . . N .
. . . . N . . . . . . . . . . . . . . . . N C A L L E H S . . .
. . . T . . . . . . . . . . . . . . . . . . E V . . . . . . . .
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ADVANCED FINISHING TECHNIQUES TERMS #2

```
X O S T S L Q T O Z U E V U E X V P D I R H Q Y N T R G G H L G
P L L S U N K C X J R T O F U O N O N T L U G V J H Z L U I G E
Z Y S S U G L U C L Q R P H C D K M T C B I H V Q O D J U J O T
F E C T Q J I X X D O A Z P E O E I Y P V T N G X Z I K I Q L H
W Y J K M U S G W L R N E T I T W E A C R U A S F L I N T E T I
I C C B A B K U E J K S W H T C V N F U I S C C E O A E U V N Y
Y Q W P B H L M O K G P S K N I O Y C E O L K B I E N L A J I X
U Y H K C R A Z Q N F A V M E I D E L Y R G Y F K O D R R E A W
A B V W K N U W I Q P R V V M D G A Q A D U G R T E N O S H P D
J H E R E Q L S A G A E Q S G V O A M R C O S S C I A T I X U E
B B G B D X L J H P S N O M I G S C O R S Q N S S A I N S L Z N
C P O P P T H X H D S T Q E P B O H S U V E U H E R I A S C V T
P R E L L I F D O O W A R R M I E I C U T O K E I R A T O S S B
T O W A X F G O R E B E U P I S H T L T R J P P R C P U L P H R
P C L R D E V A P R L R W T W T I B O S G V S E V G A R G R E I
U W G Y J Q Y S A A N U J O O O Z R Q K T L W G N O Y A I A L S
M T T Y U J A S E N Q E X L N W K M Q R A A N A D G B L M Y L T
I G R R V R I S I B K U C F F J V H X R F L I V E C R E E G A L
C C L R P V E A B T L K E Y Y A X T E X Z L O N V A Z A S U C E
E U G A E S T T E H C E X H X S G N G Z G E G O T K Y W I N X U
H L F O Z S Y N H A D O P C X P I F N C Q Y S K W Y R T O N M R
B Q X L R E R V T A F A L N H M Y M I O F D P L Y L T C E F E D
P X J E G A J L X E N M L A P W W G S B H K I G Y D E L K L B S
S E T U G R M S I L G E P I Y H O U S O F O R W V I D E I K A H
Y A G S D Z Z H F W N J F M I X P E E D U S I T A R C O T N H C
W O T I K X A Y T Y Y F R P J I T Z R Y Q Z T O I T G L D S G A
N N X R A J O D C I T E H T N Y S I T [illegible] P X S V T N J P I L J E
N I A R G D E S O L C O W N G L W S S H B V T G U X A L T K D L
P F T C G N I R E T T A P S L A H T I Y V V A T U P O Y J H K B
H H W A S A D C T X I N B F O H X I D D H X I H E P V K C O E B
W L C Z S J I S H O I O R U S S B R W P M J N R J F O E Z I P N
M V E U D C I K O Y F O U L S O R G C B X J D M Z Y Z M I X U E
```

THERE ARE 49 WORDS HERE - CAN YOU FIND THEM?

HERE ARE THE WORDS TO LOOK FOR:

ABRASIVE
BLEACH
BRUSH
DEFECT
DISTRESSING
EPOXY
GARNET
GLOSS
LACQUER
MINERALSPIRITS
OILSTAIN
OPENGRAIN
PEG
POLISH
PRESSUREFEED
ROTTENSTONE
SATIN
SEMIGLOSS
SPATTERING
SPRAYGUN
SUCTIONFEED
TACKCLOTH
TUNGOIL
WATERSTAIN
WOODFILLER

ACRYLIC
BRISTLE
CLOSEDGRAIN
DENT
ENAMEL
FLINT
GLAZE
GRITSIZE
LINSEEDOIL
NATURAL
OPAQUE
PAINT
PIGMENT
POLYURETHANE
PUMICE
SANDPAPER
SEALER
SHELLAC
SPIRITSTAIN
STEELWOOL
SYNTHETIC
TRANSPARENT
VARNISH
WAX

FIND THE WORDS IN THE PUZZLE ABOVE. WORDS MAY BE HORIZONTAL, VERTICAL, DIAGONAL, FORWARD, OR BACKWARDS.

NAME______________________________

BEST COPY AVAILABLE

ADVANCED FINISHING TECHNIQUES TERMS #2

```
. . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . .
. . . . . . . . . . . T . . . . . . . . L . . . . . . . . . . .
. . . . . . . . . . . R . . . D . . . . . I . . . . . . . . . .
. . . . . . . . . . . A . . . . E . . . . . N . . . . . . . . .
. . . . . . . . . L . N . . . . . E . C . . . S F L I N T . T .
. . . . . . . . E . . S . . T . . . F . I . . . E . . E . V N .
. . . . B . . M . . . P . . N . . . . E . L . . . E N . A . I .
. . . . . R A . . . . A . . E . . . L . R . Y . . O D R . . A .
. . . . . N U . . . . R . . M . . . . A . U . R T . N O S . P D
. . . . E . . S . . . E . . G . . . . . C . S S C I . T I . . E
. . . . . . . . H . . N . . I . . . . . S Q N S S A I N S L . N
. . . . . . . . . . . T . . P . O . . U . E U H E R . A S . . T
P R E L L I F D O O W A R . . . . I C . T O . E I R . T O S S B
. O W A X . . O . . B E . . . . H T L T . . P P R . P U L P H R
P . L . . . . . P R L . . . . T I . O S . . S E . . . R G R E I
U . . Y . . . . A A . . . . O O . R . . T L . . N . . A I A L S
M . . . U . . S E N Q . . L N . . . . . A A . . . G . L M Y L T
I G . . . R I S I . . U C F . . . . . R . L I . . . R . E G A L
C . L . . V E A . T . K E Y . . . . E . . . O N . . . A S U C E
E . . A E . T T E . C E X . . . . N G . . . . O . . . . I N . .
. . . . Z S . N H A D O . . . . I . N . . . S . W . . . . N . .
. . . . R E R . T A P . . . . M . . I . . . P . . L T C E F E D
F . . E . A . . . E N . . . . . . . S . . . I . . . E . . L . S
. E T . G . . . . . . E . . . . . . S . . . R . . . . E I . A H
. A G . . . . . . . . . . . . . . E E . . . I . . . . O T N H C
W . . . . . . . . . . . . . . . . Z R . . . T . . . G . D S . A
N . . . . . . . C I T E H T N Y S I T . . . S . . N . P I . . E
N I A R G D E S O L C . . . G . . S S . . . T . U . A L . . . L
. . T . G N I R E T T A P S L . . T I . . . A T . P O . . . . B
. . . A . . . . . . . . . . O . . I D . . . I . E P . . . . . .
. . . . S . . . . . . . . . S . . R . . . . N R . . . . . . . .
. . . . . . . . . . . . . . S . . G . . . . . . . . . . . . . .
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OCCUPATIONAL TERMS #1

```
R U B E H I J Q R L N V W I E F V U J P Y M I M P J F B B K H R
T D O I G M Y O K E N O S N D S Y A P E S M B R Q E W L C P Z O
O K R N W Z E P V B T Y N J I E P X W D O V Q A O P L H R Y V L
C Y B G H L W K T V B N H D Y D K Z I I F X C L A X A G J X H Q
G A K Z T E V G O O H N E U E F T D K Q A V Q L B I K Y Y G M V
C H A I R M A K E R F I A P U J S L I Y I F R W R D W X R Z L S
D N L A H Z Y D A T O S T G R D V H V N N P S M X Y S T E R B I
R E D L I U B L E D O M G N Z A W T A S S N A I P E V K R E L S
H N C I T Y W O O N V P R K V L C A W P P K Q J C K B E E T A E
R R W O I S G N I D L I U B E C I F F O E L O R S J K N T T X M
O O E O R W C E N O B T D N X A Z X J R C R E J T C O O S E J R
R C T H X A P H W C S A R H O U S I N G T L W D A J L I L S Y E
P E C C S N T D K Y I B A J U D Q Y P B O P D T I P Y T O R D S
O A B U E I V O X Z Y L F J S E P S R O R L G U N N C C H E I S
I P T M P P N F R K G E T G E Q I E T E U N T P E D O U P P O E
R N E T U A S I S K F M S J W Y T R N Q I F K X R B H R U P M R
E N S R E L T N F U F A M P U S E G D B S C H O O L S T M I P T
P A C P A R P I I E R K A Q U H I J B A L K A A R P H S F Z R S
I A I P E T N Q O S R E N J T S A E F I N I S H E R K N Q A S I
W O E T I C O M E N S R D A E Q W P S E G D I R B X B O Y E C D
B C R H I O T R A Y S A E D G V K I F L Q B E V S I C C M T S W
K D U W O J E O K K V L L E J F K D U E J H H P V D K I W M X Q
R C F D H D L X R X E U G G Z T U T B C C S G E D I S P G I Q Y
M U D L G T E L S L O R F I O G S W G T B E C D S K R M L E K W
T T N J O W N J H R N N E R J N Q R A R I E V T I W E F B Y Q D
B P O B D A Z K V N W Q I G D B T M G I Y O R L U V W V H D T F
B X K V U I B J X U E D O S V O R S U C X K L Z D L E Z K W J O
L Z I Y M C V C D T O K M N H E I P Q I V E F Q B D S O F Q A W
Y B Y G V Q D I J G H Q B E E H C A G A D S H L N X T O U L Y T
D Y Y Z L R G H B Z F Z Q N R E P M L N T Q T L Z M L Z G K W D
J T O V N U E H W Z O L E D I R I A P Z F I N H O P E I O V T L
J H J W I C A R V E R V H G T Z M B Y F F B X I S R W V H R C H
```

THERE ARE 36 WORDS HERE - CAN
YOU FIND THEM?

HERE ARE THE WORDS TO LOOK FOR:

ADJUSTER
CARPENTER
CHAIRMAKER
CONSTRUCTION
DESIGNER
DRAFTSMAN
FINISHER
HOUSING
LEATHERTOOLER
OCCUPATIONS
OPERATOR
PLUMBER
SCHOOLS
SHAPER
STAINER
UPHOLSTERER
WEBBINGTACKER
WIPER

BRIDGES
CARVER
CHAIRMAKER
DECORATOR
DISTRESSER
ELECTRICIAN
GLASSINSPECTOR
INSPECTOR
MODELBUILDER
OFFICEBUILDINGS
PATTERNMAKER
REFINISHER
SEMISKILLED
SOFAINSPECTOR
TABLEMAKER
VENEERMATCHER
WELTSEWER
ZIPPERSETTER

FIND THE WORDS IN THE PUZZLE ABOVE. WORDS MAY BE HORIZONAL, VERTICAL, DIAGONAL, FORWARD, OR BACKWARDS.

NAME____________________________

OCCUPATIONAL TERMS #1

```
. . . . . . . . R . . . . . . . . . . . . . . . . . . . . . . .
. . . . . . . . . E . . . . . . . . . . S . . . . . . . C . . .
. . . . . . . . . . T . . . . . . . . . O . . . . . . H . . . .
. . . . . . . . . . . N . . . . . . . . F . . . . . A . . . . .
. . . . . . . . . . . . E . . . . . . . A . . . . I . . . . . .
C H A I R M A K E R . . . P . . S . . . I . . . R . . . R . . .
D . . . . . . . . . . . . . R . . H . . N . . M . . . . E R . .
R E D L I U B L E D O M . . . A . . A . S . A . . . . . R E . .
. . C . . . . . . . . . . . . . C . . P P K . . . . . E E T . .
R R . O . S G N I D L I U B E C I F F O E . . R S . K N T T . .
O O E . R . . . . . . T D . . . . . . R C R E . T C . O S E . R
R C T H . A . . . . . A R H O U S I N G T L . . A . . I L S . E
P E C C S . T . . . . B A . . . . . . . O . . T I . . T O R . S
O A B U E I . D . . . L F . . . . . R O R . G . N . . C H E . S
I P T M P P N . R . . E T . . . . E T E . N . . E . . U P P . E
R N E T U A S I . . . M S . . . T R N . I . . . R . . R U P . R
E . S R E L T N F . . A M . . S E G . B S C H O O L S T . I . T
P . . P A R P I I E . K A . U H I . B . . . . . . . . S . Z . S
I . . . E T N . O S R E N J T S . E F I N I S H E R . N . . S I
W . . . . C O M . N S R D A E . W . S E G D I R B . . O . E . D
. . . . . . T R A . S A E D . . . . . L . . E . . . . C M . . .
. . . . . . . O . K . L L . . . . . . E . H . . . . . I . . . .
. . . . . . . . R . E . . G . . . . . C C . . . . . S . . . . .
. . . . . . . . . . . R . . . . . . . T . . . . . K R . . . . .
. . . . . . . . . . . . . . . . . . A R . . . . I . E . . . . .
. . . . . . . . . . . . . . . . . M . I . . . L . . W . . . . .
. . . . . . . . . . . . . . . . R . . C . . L . . . E . . . . .
. . . . . . . . . . . . . . . E . . . I . E . . . . S . . . . .
. . . . . . . . . . . . . . E . . . . A D . . . . . T . . . . .
. . . . . . . . . . . . . N . . . . . N . . . . . . L . . . . .
. . . . . . . . . . . . E . . . . . . . . . . . . . E . . . . .
. . . . . C A R V E R V . . . . . . . . . . . . . . W . . . . .
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OCCUPATIONAL TERMS #2

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R X C I K T S O D C X E U L X G T R D K I T H E T T D J R Y J F
S G N I D L I U B E C I F F O T G R E V R A C R B F G P T D J M
R F Y T P I F Q Z S Z J Y H J A I H M K I O E C M I C X U I G Q
W I D E C O R A T O R V B N U B U D K P A T H U X C T I U N W Z
G N K A Y F B X A Q Z H I D N L Z I T X S M I Y C G N P N S D N
J D H D G L B I Z K H N Z T V E K R F U X P N O W A N L N P O E
T Z B O L J S O Z P G X J B C M T T J L M C N R M W G Y E E S P
E O E C T H D F N H S R W Z D A K D Q I V S A S E T T H R C T J
R L F K A U G B X V P O G B Y K A E J U T H T R A T R Z B T A I
Q N E P C U W T Y D A T E H K E Q S S R B F U K P L T B B O I V
S Z E C B C M N Y W D C H X U R W X U J A R Z R O E P A J R N N
Q R I O T T P S A Y I E V X Q D O C F R Q T E R L A N N P Z E T
F V Q D C R P T E V L P W E E I T Y D O X T V V S T S T X Y R P
R E H S I N I F N G J S E L N I E N E A T N K J G H L J E J V B
Q W R G C F B C T S D N L R O E R E W E S T L E W E O J T R X D
R W W V N P E B I X U I O N X V E E S R G U Z J X R O J J Q M J
K U E K V I K A O A K A R Q U R D R K O Q J W B A T H S D O W K
M P B P I A S D J S N F B B E I E V M A K C O G O O C G J F Q Z
U J B E C S U U I C Q O M F S P S C M A M K D E F O S Q T T Y C
H N I A W Z X M O K X S I T P B L N W M T R E V N L N R Q H H T
O N N B O J E H Z H W N R I F R O V O R O C I J D E M P V A M D
V Z G K E S F W B Y I E Z R H B F F D I S D H A F R B H I Z E U
E A T B Z Q H Q L S S S H C E E K D I M T H E E H L P R N S H P
C F A I G K M W H S X D L H Z B W J Z M N A T L R C M E I O I H
X U C Y P C O E E Y K V W X S B M C P U X Y P T B A E G O Z B O
L H K U U N R R X F H N U P H Z Z U B L D P S U K U N X G E D L
D A E O E Y X F G F O V E U M H S R L J P P N E C E I I U V J S
I R R Q L S G W J U F O E C F U Q B M P Z G R T R C X L V T E T
D U C E D D O P E R A T O R G L A S S I N S P E C T O R D L H E
E G G E H V J I A O U C S Z W L M Y C G Z Q Q R P O E O N E Q R
D L D I G Q S Y G F T W B B F J W Y M I C E S Q Q E A D E A R E
K I Z E D Q S E F Y J F C S Y X E D F G Y J Z C Z C C S W M H R
```

THERE ARE 36 WORDS HERE - CAN YOU FIND THEM?

HERE ARE THE WORDS TO LOOK FOR:

ADJUSTER
CARPENTER
CHAIRMAKER
CONSTRUCTION
DESIGNER
DRAFTSMAN
FINISHER
HOUSING
LEATHERTOOLER
OCCUPATIONS
OPERATOR
PLUMBER
SCHOOLS
SHAPER
STAINER
UPHOLSTERER
WEBBINGTACKER
WIPER

BRIDGES
CARVER
CHAIRMAKER
DECORATOR
DISTRESSER
ELECTRICIAN
GLASSINSPECTOR
INSPECTOR
MODELBUILDER
OFFICEBUILDINGS
PATTERNMAKER
REFINISHER
SEMISKILLED
SOFAINSPECTOR
TABLEMAKER
VENEERMATCHER
WELTSEWER
ZIPPERSETTER

FIND THE WORDS IN THE PUZZLE ABOVE. WORDS MAY BE HORIZONAL, VERTICAL, DIAGONAL, FORWARD, OR BACKWARDS.

NAME______________________________

OCCUPATIONAL TERMS #2

```
. . . . . . . . . . . . . . . . . R . . . . . . . . . . . . . .
S G N I D L I U B E C I F F O T . R E V R A C R . . . . . . . .
. . . . . . . . . . . . . . . A . . . K . . E . . . . . . I . .
. . D E C O R A T O R . . . . B . . . . A T . . . . . . . N . .
. . . . . . . . . . . . . . . L . . . . S M . . C . N . . S . .
. . . . . . . . . . . . . . . E . . . U . . N O . A . . . P . .
. . . . . . S . . . . . . . . M . . J . . C N R M . . . . E S .
E . . . . H . . . . . R . . . A . D . . . S A S E . . . . C T .
. L . . A . . . . . . O . . . K A . . . T . T R . T . . . T A .
. . E P . . . . . . . T . . . E . . . R . F . . P L T . . O I .
. . E C . . . . . W . C . . . R . . U . A . . R . E . A . R N .
. R . . T . . S . . I E V . . D . C . R . . E . . A N . P . E .
. . . . . R . . E . . P . E E . T . D . . T . . . T S T . . R .
R E H S I N I F . G . S E L N I . . . . T . . . . H L . E . . .
. . . G . . . C . . D N L R O E R E W E S T L E W E O . . R . .
. . W . N . . . I . . I . N . . E E S . . . . . . R O . . . . .
. . E . . I . . . A K A R . . R D R K . . . . . . T H . . . . .
. . B . . . S . . S N F . B E I E . M A . . . . . O C . . . . .
. . B . . . . U I . . O . F S P S . . A M . . . . O S . . . . C
. . I . . . . M O . . S I T P . . N . M T R . . . L . . . . H .
. . N . . . E . . H . N R I . . . . O . O C I . . E . . . A . D
. . G . . S . . . . I E Z R . . . . . I . D H A . R . . I . E U
. . T . . . . . . S S . . . E . . . . . T . E E H . . R . S . P
. . A . . . . . H S . . . . . B . . . . . A . L R C M . I . . H
. . C . . . . E E . . . . . . . M . . . . . P . B A . G . . . O
. . K . . . R R . . . . . . . . . U . . . . . U K U N . . . . L
. . E . . . . . . . . . . . . . . . L . . . . E C E I . . . . S
. . R . . . . . . . . . . . . . . . . P . . R . R C . L . . . T
. . . . . . O P E R A T O R G L A S S I N S P E C T O R D . . E
. . . . . . . . . . . . . . . . . . . . . . . . . . . . . E . R
. . . . . . . . . . . . . . . . . . . . . . . . . . . . . . R E
. . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . R
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FIND A WOOD

```
ACMAGNOLIAXQKWKZ
TUMAHOGANYOUQANIJF
AAJNRKLBBRAZILWOODZU
FKPOPLARLIROCKHEADOKLS
CIIKLMNAMARILLOOOPACBDCT
AJKLRJJQGK-CLNBMYRTLEXCWPI
MAPLENDIJBGFHVURFAZDEXYNVJQC
IBHCMEOPJABILLOTSCHENCHENARU
BASSWOODSHYKXWNOZZACCB ROBST
EJLEHFMNDQJKORINAPPKYLMRPIJJ
EKAGIDEBCUQAZKIJKLYMNONYOLKK
CBIUCSTFSERBGJKKLOGWOODXMLAL
HACKBERRYBSUHHIOBALSAVWXLOBN
OELIMJZKYRITGBXOUEWDSIPIRITI
PMERANTIAHTAFFNCCVIHVIQISN
LIKIJICBENGEOKTPVXQGROOO
IODVCTOERLELVESGOBOONS
ACBGHVNWFMMNYTSXXOLS
VKILOGULCACEDAROKA
XOXEETACOHWNNLLA
LORABEPH
MACTYNEI
ASPOCCCC
NPHPRHAK
SEALLENO
PNSCKELR
RONACDEY
UBPINEFG
CHOLLYHK
EMLKBJAI
DOGWOODV
NQCLTUNW
PDORSMKY
OBAPBNLX
EOPRBADLYZ
FCYPRESSLMNO
OOCJCJCKLGUMSM
SCHESTNUTLTLJKLN
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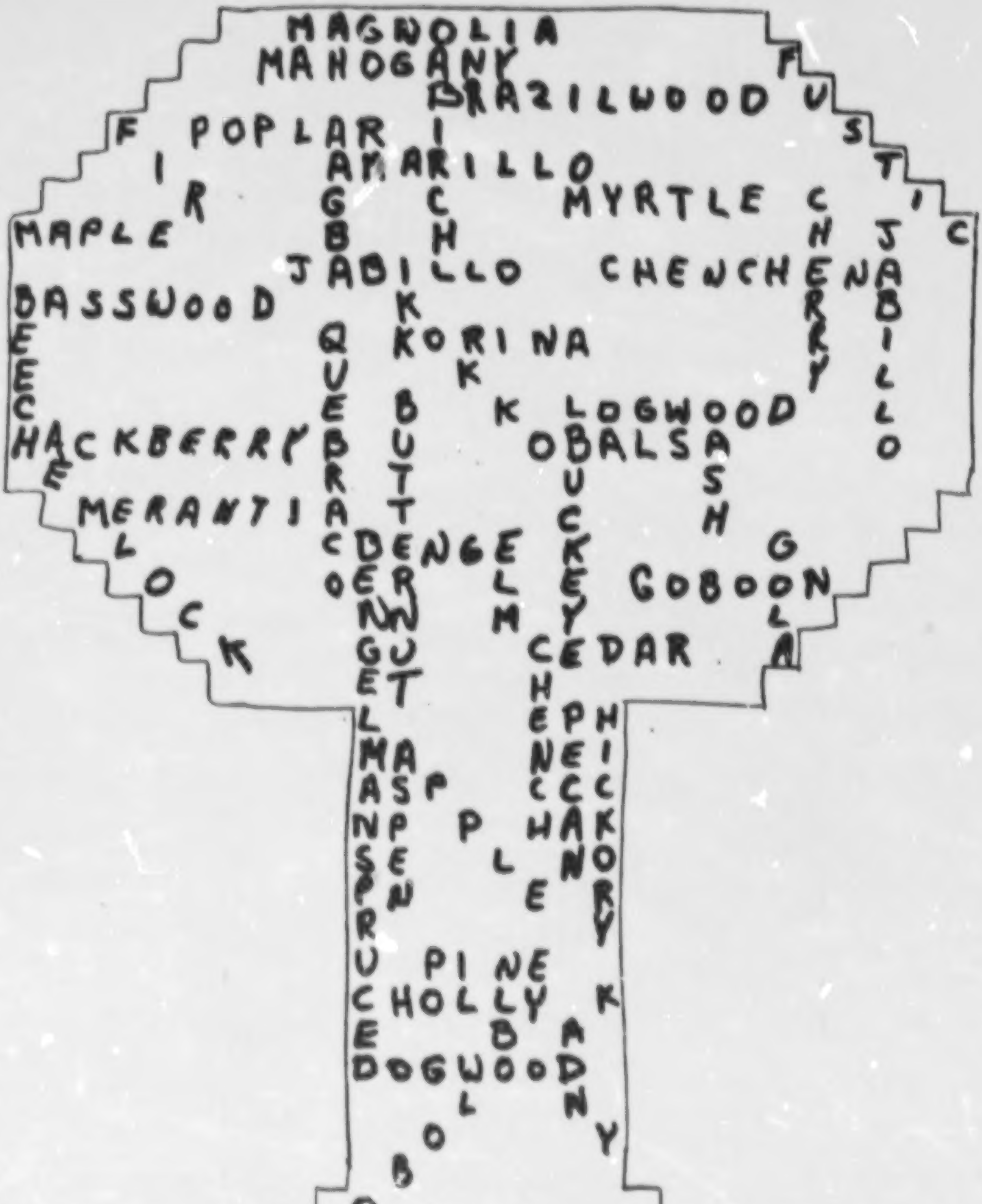
DIRECTIONS:
USING THE WORD LIST, FIND AND CIRCLE THE NAMES OF THE TYPES OF WOOD. THEY MAY BE UP, DOWN, ACROSS OR DIAGONAL


MAGNOLIA
MAHOGANY
BRAZILWOOD
FUSTIC
POPLAR
FIR
AMARILLO
MYRTLE
MAPLE
JABILLO
CHENCHENA
CHERRY
JABILLO
BASSWOOD
KORINA
LOGWOOD
BEECH
HACKBERRY
BALSA
QUEBRACHO
BUTTERNUT
BUCKEYE
ASH
MERANTI
HEMLOCK
BENGE
ELM
GOBOON
GOLA
CEDAR
HICKORY
ASPEN
SPRUCE
PINE
HOLLY
DOGWOOD
CYPRESS
GUM
CHESTNUT

FIND A WOOD
WORD LIST

1. Agba
2. Amarillo
3. Apple
4. Ash
5. Aspen
6. Balsa
7. Basswood
8. Beech
9. Benge
10. Birch
11. Brazilwood
12. Buckeye
13. Butternut
14. Cedar
15. Chenchen
16. Cherry
17. Chestnut
18. Cocobolo
19. Cypress
20. Dogwood
21. Ebony
22. Elm
23. Fir
24. Fustic
25. Goboon
26. Gola
27. Gum
28. Hackberry
29. Hemlock
30. Hickory
31. Holly
32. Jabillo
33. Kokko
34. Korina
35. Logwood
36. Magnolia
37. Jabillo
38. Mahogany
39. Maple
40. Meranti
41. Myrtle
42. Oak
43. Pecan
44. Pine
45. Poplar
46. Quebracho
47. Engelmunspruce

MACHINE FIND A WORD

```
                          T
                          A
J I G S A W A B R G N H I B Z Q Y R X Y C W M F A W E B
        B C T E N O N E R L A T H E S D T Z I A
        Q P D C S F G O P E R S Q X I J U J T I
        A E E T S C O L L S A W W L P K K V E R
        O D F G H A B M M A L N J O I N T E R C
        P R A D I A L S A W U T K O O L G P S O
        B C U W I J K B A N D S A W J M Q S A M
        Q X V O N L M C D W F V H C N I H C W P
        R U N I P L A N E E G P L A N E R R F R
        D R I L L P R E S S H R U S P H I O A E
        B Y D S U R F A C E R V D W C E D L E S
        S Z V U T S S Z X F G R I N D E R L B S
        U C M U T R N G Y D K L T X A X J S H O
        B V N P E E F A H E S A N D E R W A X R
        J K D L Q O R B I C J A H F Z Y K W G U
        T A M O R T I S E R D M W O L Q Z Y S V
        B E L T S A N D E R E Y N G P M I R T Z
```

WARM-UP WORD LIST

1. TABLE SAW
2. ROUTER
3. PLANER
4. SHAPER
5. LATHE
6. SANDER
7. JIGSAW
8. RADIAL SAW
9. DRILL PRESS
10. JOINTER

SCRAMBLED WORD LIST

1. TEMOSRRI ____________________
2. DRIGNRE ____________________
3. WABSNAD ____________________
4. NPAUNEIL ____________________
5. EARWTIMS ____________________
6. ACROSWLLS ____________________
7. FUSRARCE ____________________
8. NASTEREBDL ____________________
9. RMOPCESORSIAR ____________________
10. NENTROE ____________________

DIRECTIONS: FIND THE WORDS ABOVE IN THE PUZZLE. THEY MAY BE HORIZONTAL, VERTICAL, OR DIAGONAL.

MACHINE FIND A WORD

```
                        T
                        A
J I G S A W             B                   M
          T E N O N E R L A T H E           I A
                        E                   T I
              S C O L L S A W               E R
                        A       J O I N T E R C
        R A D I A L S A W                   S O
                    B A N D S A W         S A M
                              H           C W P
        U N I P L A N E     P L A N E R   R   R
      D R I L L P R E S S         P       O   E
        O S U R F A C E R           E     L   S
          U             G R I N D E R     L   S
            T       D                     S   O
              E             S A N D E R   A   R
                R             A           W
        M O R T I S E R       W
    B E L T S A N D E R
```

WARM UP WORD LIST

1. TABLE SAW
2. ROUTER
3. PLANER
4. SHAPER
5. LATHE
6. SANDER
7. JIGSSAW
8. RADIAL SAW
9. DRILL PRESS
10. JOINTER

SCRAMBLED WORD LIST

1.	TEMOSRRI	MORTISER
2.	DRIGNRE	GRINDER
3.	WABSNAD	BANDSAW
4.	NPAUNEIL	UNIPLANE
5.	EARWTIMS	MITERSAW
6.	ACROSWLLS	SCROLLSAW
7.	FUSRARCE	SURFACER
8.	NASTEREBDL	BELTSANDER
9.	RMOPCESORSIAR	AIR COMPRESSOR
10.	NENTROE	TENONER

DIRECTIONS: Find the words above in the puzzle. They may be horizontal, vertical, or diagonal.

JOINERY FIND A WORD

```
E A B T P O L Y G O N M I T E R O Y W X
P N C R P N P A L S S O R C R E T I M P
U O D S C D R A B B E T N B A Z P Q Q L
B B V L E W X L M N M M O R T I S E O R
T L K A A L G L U E B L O C K S T U S M
N I G E F P C O M P O U N D M I T E R V
I N H D Y Y
O D E I Z K
J R S F J L
K A P G T I
C B L T N A
O B I N I T
L E N I O E
Q T E O J V
K H I J T O
J R H X T D
D T I O U J
O A E B B D
W D S N T U
E Y A Z O K
L U B D C N
C B L F V E
A G X G D W
```

SCRAMBLED WORDS

1. BARBTE = ____________________
2. NLPISE = ____________________
3. TIVLDOEA = ____________________
4. CEBLOUGKSL = ____________________
5. PANELD = ____________
6. RIMTE = ____________
7. DOAD = ____________
8. YGOMRELPONIT = ____________
9. RISETMO = ____________
10. DNDADBOLI = ____________

WARM UP WORDS

1. DOWEL
2. BOX JOINT
3. BLIND RABBET
4. BUTTJOINT
5. KEY
6. LOCKJOINT
7. COMPOUND MITER
8. CROSSLAP
9. TENON
10. GLUE

DIRECTIONS: FIND THE WORDS FROM EACH GROUP IN THE PUZZLE. THEY MAY BE HORIZONTAL, VERTICAL, OR DIAGONAL; FORWARD, OR BACKWARDS.

FIND A WORD

```
X G L U E B L C K K A B R B V E P U N K R O C K S I X
N J C C T L Q R M N Z L Q T U N F T G O H N I J P K R
I A A M A I H A N D S C R E W W E L D W O O D L R R C
N L S B O Q R X Z O C R E E O S M D D R L X Z L I L H
A A E G G L U E B L O C K D E G O P O R Y Y N N N N A
V V I I N G T F R A M I N G S Q U A R E Y E X M G G L
B A N L E P I P E L B U O D   G I P E X R M B A C A K
A L O C B D E B E L L Y K O G H E A E B E A P K L O Q
Z T L A M I N A A W I P L A S T I C R E S I N B A D P
D R O W A T E R P R O O F I I R J D S W A R P C M A S
U I Z D O F F C G O R C C L A M P L E L L A R A P R U
O A E K T E M L M O R C O N T A C T C E M E N T O R N
R L T B O Y E A Q N H I B J X K L L K M G Y T Z N I N
I A E A X L A M M R P M A L C E P I P O L K X J K N Y
Q S U O P U A P O O G H N T G M A N R O N E D R M L X
D S P A R C V C D O X O D X O D N B L N O L A I A S A
F E M I T E R C L A M P G P N M C O K O P M O L M O P
R M V O W B N O L T O I N O E Q U A L P R E S S U R E
O B I T I Q W D N G X Y B W T I P O O M D R T A D E Q
G L O W S P X X A F O Y N D A S S Q R Q R S K B C F G
O Y R W T O C A R P E N T E R S S D E E P T H R O A T
L J Y Z L N L R P S F Z P R E M I X E D H I J K L M U
K B C A T F I S H E Y B O D U T I G H T F I T K X N V
N B A Z S L E W O T R E P A P K K X C O N S U M T P W
A D H E S I V E A C G G S M A L L E T P L E V E L U X
```

The words on the next page in some way refer to glues, clamps, or gluing. The words may be backward, forward, or diagonal. Circle the word.

NAME ______________________________

WORD LIST

1. Handscrew
2. Bar clamp
3. Pipe clamp
4. Spring clamp
5. Parallel
6. Glue block
7. Animal
8. Hide
9. Plastic resin
10. Tight fit
11. Contact cement
12. Weldwood
13. Carpenters
14. Band
15. Equal pressure
16. Double pipe
17. Miter clamp
18. Powder
19. Powder
20. Premixed
21. Elmers
22. Adhesive
23. Trial assembly
24. Framing square
25. Papertowels
26. Casein
27. Waterproof
28. End
29. Epoxy
30. Maple
31. Mallet
32. Warp
33. Bow
34. Twist
35. Level
36. Deep throat
37. Set
38. Dry
39. Catfish
40. Bond
41. Nail
42. Chalk

APPENDIX 5

SUGGESTED THOUGHT QUESTIONS

SUGGESTED THOUGHT QUESTIONS

The following questions were designed as thought questions to stimulate interest and guide discussions. Suggested uses include writing the questions on the chalkboard or overhead projector and displaying them at the beginning of the unit discussion, letting students answer them for extra credit, or assigning topics for written or oral reports. They are not intended as unit tests.

Unit I - Orientation to Advanced Woods

1. Why is attitude the most important factor in safety?
2. What are the colors used in the color coding system in our shop and what does each represent?
3. How can "cooperation with fellow workers" contribute to a safe working environment?
4. How does safety affect construction cost?

Unit II - Review of Materials

1. Why is softwood used extensively for construction lumber?
2. What factors determine the use of plain sawed as opposed to quarter-sawed lumber?
3. What products are now being manufactured in order to effectively utilize the entire tree?
4. List the grading systems for:
    a. softwoods
    b. hardwoods
    c. hardwood plywood
    d. softwood plywood
5. How does moisture content affect a wood's suitability for furniture construction?

Unit III Designing Furniture and Cabinets

1. What are the most important fundamentals of good design?
2. Why is it important to study the works of other furniture designers or periods?
3. What is aesthetic value?
4. Who was Duncan Phyfe?
5. List some features of his design.

Unit IV Furniture Construction

1. How will a knowledge of furniture construction techniques make you a better consumer?

2. What factors determine the joinery used on a piece of furniture?

3. Sketch the more common joints used in furniture casework construction.

4. Name the most important fundamental of good furniture construction.

Unit V Fasteners and Hardware

1. List the hardware commonly used on furniture.

2. What is the difference between functional hardware and decorative hardware?

3. Why should drawer pulls and knobs be fitted to drawers before finishing, and then removed?

Unit VI Project Planning

1. Why should project plans be drawn neatly and uniformly?

2. What is the difference between a sketch and a working drawing?

3. How do you figure board feet? square feet? linear feet?

4. What is a plan of procedure?

5. List the contents of a bill of materials sheet.

Unit VII Portable Power Tool Safety

1. What are the major safety considerations when dealing with portable power tools?

2. What determines the "size" of each of the portable power tools in our shop?

3. Why do some portable power tools have a three-prong plug and some have a two-prong plug?

4. What parts of a portable power tool should be inspected from time to time?

Unit VIII Stationary Power Tools

1. Why is it important to have a good understanding of a machine before operating it?

2. What is the purpose of operator zones?

3. How is the size determined for each machine?

4. What operations may be performed for each machine in our shop?

Unit IX Material Processing

1. What is the order of steps for squaring stock when using power machines?

2. What are the advantages and disadvantages of each type of glue available for use in the woodworking shop?

3. What is an organic glue? a synthetic glue?

4. What are the steps for gluing and clamping stock together?

5. Why should the grain be reversed when gluing stock?

6. What are the purposes of gluing together stock? laminating stock? bending stock? veneering?

Univ X Advanced Finishing

1. What is the purpose of finishing wood?

2. What are the steps for finishing wood?

3. What is an abrasive?

4. Distinguish between a natural and manufactured abrasive.

5. What solvent is used to thin or clean each type of finish?

6. What is the difference between a penetrating finish and a surface finish?

7. What are the advantages and disadvantages of water stains? oil stains? spirit stains?

Unit XI Occupational Information

1. What are several careers included in the woods industry?

2. What factors should be considered when choosing a career?

3. How will a résumé help you when applying for a job?

4. What are the differences in skilled, semi-skilled, and unskilled occupations?

APPENDIX 6
SUGGESTED RESOURCE MATERIALS

SUGGESTED RESOURCE MATERIALS

1. General Safety Manual for Vocational Technical Education and Industrial Arts, Bulletin No. 1674, Louisiana State Department of Education, 1982.
2. How to Specify and Buy Industrial Arts Lumber and Plywood, Frank Paxton Lumber Company, 1981.
3. Paxton Beautiful Woods, Frank Paxton Lumber Company, 1984.
4. Pennsylvania Industrial Arts Safety Guide, 2nd ed., Pennsylvania Department of Education, 1981.
5. Washington State Industrial Arts Safety Guide, State of Washington Department of Education, 1976.
6. Wood and Wood Products, 300 West Adams, Chicago, Illinois 00606.
7. Woodworking and Furniture Digest, Hitchcock Publishing Company, Wheaton, Illinois 60187.
8. Fine Woodworking, Tarnton Press, 52 Church Hill Road, Box 355, Newton, Connecticut 06470.
9. Center for Career Planning and Placement Handbook, Northwestern State University, Natchitoches, Louisiana 71497.
10. The Family Handyman, The Webb Company, 1999 Shepard Road, St. Paul, Minnesota 55116.
11. Hands On, Published bi-monthly by Shopsmith, Inc., 750 Center Drive, Vandalia, Ohio 45377.
12. Industrial Education, 120 W. Second Street, Duluth, Minnesota 55802.
13. Woodsmith, Woodsmith Publishing Company, 1912 Grand Avenue, Des Moines, Iowa 50309.
14. School Shop, Box 8623, Ann Arbor, Michigan 48107.
15. The Woodworker's Journal, Madrigal Publishing Company, Inc., P. O. Box 1629, New Milford, Connecticut 06776.

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2. Bushwell, William. Painting and Decorating Encyclopedia. South Holland, Illinois: Goodheart-Willcox Co., 1982.

3. Cliffe, Roger W. Woodworking Principles and Practices. Chicago: American Technical Publishers, Inc., 1981.

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10. Feirer, John L. and Hutchings, Gilbert R. Advanced Woodwork and Furniture Making. Fourth Edition. Peoria, Illinois: Charles A. Bennett Company, Inc., 1978.

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13. Hutchings, Gilbert; Martin, G. Eugene; and Coleman, J. Mario. Working with Wood. Bloomington, Indiana: McKnight Company, 1982.

14. Wagner, Willis. Modern Woodworking. South Holland, Illinois: Goodheart-Willcox, 1980.

15. Wood Handbook. #72. U. S. Department of Agriculture, U. S. Government Printing Office, Washington, D.C.

16. Zimmerman, Fred W. Exploring Woodworking. South Holland, Illinois: Goodheart-Willcox, 1981.

17. Soderburg, George A. Finishing Technology. Bloomington, Illinois: McKnight Publishing Co., 1969.

18. Douglas, J. H. and Roberts, R. H. Units in Woodworking. New York: Delmar Publishers, Inc., 1981.

19. Spence, William P. and Griffith, L. Duane. Woodworking Tools, Materials, Processes. Alsip, Illinois: American Technical Publishers, Inc., 1981.

"END OF DOCUMENT"